Test Resource Management Center (TRMC)

FY 2010 Annual Report

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DIRECTOR'S FOREWORD

My fifth Annual Report covers the Test Resource Management Center's FY 2010 activities, and goals and objectives for FY 2011. In 2010, the Strategic Planning Division adjusted the Strategic Plan biennial publication to even years with completion of the 2010 Strategic Plan for DoD T&E Resources. In doing so, the TRMC aligned the Strategic Plan with the Planning, Programming, Budgeting, and Execution (PPBE) process, enabling the Military Departments to address identified T&E capability needs in the next POM cycle. Other efforts in 2010 involved assessing proposed changes to the composition and related funding of the Major Range and Test Facility Base (MRTFB) facilities, chartering AT&L Joint Analysis Teams to determine the appropriate funding amounts and responsible Component(s) for DoD Space Ranges and Counter-Improvised Explosive Defeat test assets.

TRMC has continued development of an enterprise level Test Capability Directory (TCD) that provides an online resource to support Strategic Planning and Budget Certification, as well as the acquisition community, and TRMC's other missions. The TCD provides a flexible, secure, online database of specific test capabilities at the range, facility, or lower level and contains technical, financial, and metric data from across the T&E enterprise. The TCD is currently undergoing beta testing with the Services and DISA, which is scheduled to be available by the 3rd quarter of FY 2011. In addition, TRMC vigorously promoted MRTFB outreach opportunities; refocused the MRTFB Annual Review on Service test capability roadmaps, held our fifth successful Annual Review in August 2010, and published the TRMC Annual Report for FY 2009.

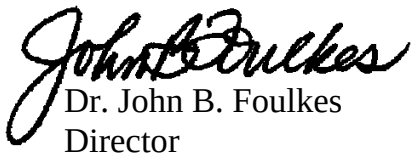
During 2010, the Central Test and Evaluation Investment Program (CTEIP) again made significant progress in the development and deployment of test infrastructure capabilities. This year 21 Joint Improvement and Modernization (JIM) projects continued in execution, and a number of them successfully completed development and began supporting test activities across the MRTFB and other ranges.

Funded at $93.3M in FY 2010, the Test & Evaluation/Science & Technology (T&E/S&T) Program made significant progress in the 103 projects executed across the program's seven test technology areas. In 2011, the T&E/S&T Program will continue to mature technologies needed to reduce engineering development and integration risks for the CTEIP-funded Subminiature Flight Safety System, which is developing a very compact, modular flight safety package that will support testing of next-generation extended range munitions.

In FY 2010, the Joint Mission Environment Test Capability (JMETC) made significant progress in accomplishing the objectives of the "Testing in a Joint Environment Roadmap." In FY 2010, The United States Joint Forces Command (JFCOM) J84/89 conducted a distributed live, virtual, and constructive test event during the week of June 14 - 17, 2010, using the TRMC JMETC infrastructure to support the test. JFCOM J89 assessed the Joint Close Air Support (JCAS) operational mission process used by the United States Army (USA), United States Air Force (USAF), and United States Marine Corps (USMC) operational systems. The test event, held during Test Week 2010 at the Von Braun Center, Huntsville, AL, was designated as "JCAS Distributed Test." The purpose of this test was to characterize the Call for Fire/Close Air Support (CAS) Request JFCOM Joint Test Thread (JTT) process for a USA/USAF and USMC operational configurations.

With the National Defense Authorization Act for FY 2010, the TRMC was tasked to conduct two studies related to in-sourcing initiatives of the T&E facilities and ranges of the Defense agencies. The Senate Report accompanying S. 1390, the National Defense Authorization Act (NDAA) for Fiscal Year 2010, requires the TRMC provide a report to the congressional defense committees to describe the extent to which contractor positions in the Major Range and Test Facility Base should be converted to Department of Defense civilian employee positions. H.R. 111-166, to accompany NDAA for FY 2010, requires the TRMC provide a report describing the potential negative impacts of projected funding levels for the Air Force test and evaluation (T&E) program to congressional defense committees. Publication of the report was delayed for data collection. At year-end, the report was being revised with the Services.

The TRMC's long-term goal continues to be to guide the development of the T&E infrastructure—not just facilities and property, but also the processes, workforce, and needed skills to fulfill both our current and future missions. As such, the TRMC is the "DoD's steward of the T&E infrastructure."



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1.0 Introduction:

This is the fifth Annual Report of accomplishments and on-going actions by the Department of Defense Test Resource Management Center to plan for and assess the adequacy of the Major Range and Test Facility Base; to provide adequate testing resources in support of development, acquisition, fielding, and sustainment of defense systems; and, to maintain awareness of other test and evaluation (T&E) facilities and resources, within and outside the Department. This report provides an opportunity to demonstrate how the TRMC directly supports the research, development, and acquisition communities across DoD and, ultimately, the individual soldier, sailor, airman, and marine.

In response to Title 10, United States Code, Section 196, DoD Directive (DoDD) 5105.71 established the TRMC as a DoD field activity under the authority, direction, and control of the USD(AT&L) to 1) review and provide oversight of proposed DoD budgets and expenditures for T&E facilities and resources; 2) develop a biennial Strategic Plan reflecting the needs of the DoD with respect to T&E facilities and resources; 3) review the Military Departments' and Defense Agencies with T&E responsibilities proposed T&E budgets for adequacy and certify that they are in compliance with the Strategic Plan; and 4) administer the Central Test and Evaluation Investment Program (CTEIP), and the Test and Evaluation/Science and Technology (T&E/S&T) program.

Currently, the TRMC consists of four divisions to support these congressional mandates (Figure 1).

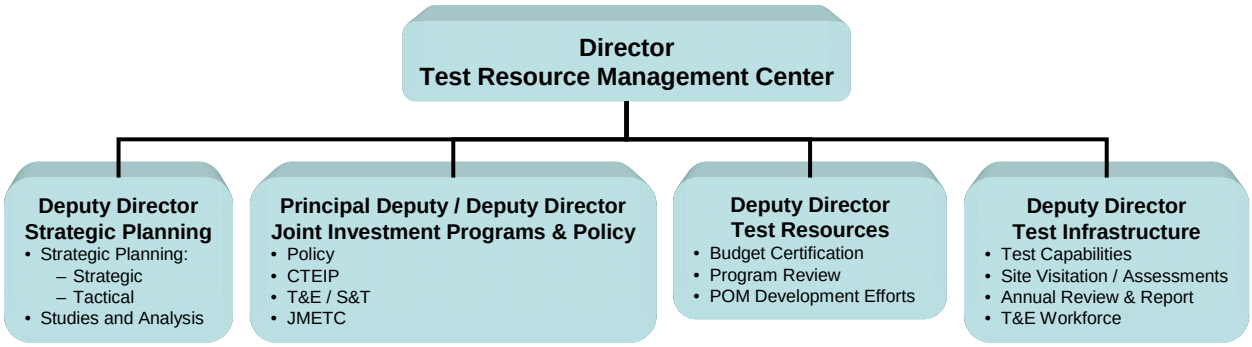

Figure 1. TRMC Organization and Functions

The Strategic Planning Division, Test Resources Division, Joint Investment Programs and Policy Division, and Test Infrastructure Division focus on the four core business areas comprising TRMC's mission. The Strategic Planning Division is the architect of the biennial Strategic Plan for DoD T&E Resources.

The Joint Investment Programs and Policy Division provides program management for CTEIP, T&E/S&T, and the Joint Mission Environment Test Capability (JMETC) programs as well as the T&E infrastructure policy.

The Test Resources Division provides the annual certification of the T&E budgets as well as leading program reviews and POM development efforts designed to assist the Military Departments and Defense Agencies with T&E responsibilities in maintaining the T&E infrastructure.

The Test Infrastructure Division provides oversight of the overall T&E infrastructure to include test capabilities, T&E workforce, and direct liaison with the MRTFB activities. In addition, the Test Infrastructure Division is responsible for assessing proposed changes to the composition of the MRTFB and developing performance measures to assess the overall "health" of the MRTFB.

The Congress recognized the need to protect and sustain T&E capabilities across the Military Departments, and extending to the Defense Agencies and other entities outside the DoD. The goal is to have a healthy T&E infrastructure capable of supporting the development of complex weapon systems in a joint, operationally realistic environment. The infrastructure should be global in nature, adaptive to multiple missions, persistent across the acquisition life-cycle, integrated across the spectrum of Test Capability Areas, and distributable among the various sites and locations required by our customers. With this principle in mind, the TRMC has set out to guide the development of the Department's T&E infrastructure—not just facilities and property, but also the processes, paradigms, workforce, and skill sets — required to fulfill our mission and vision. As such, the TRMC is the "steward of the T&E infrastructure."

2.0 Mission, Goals, and Vision:

The TRMC's mission, as stated in DoDD 5105.71, is to "plan for and assess the adequacy of the…MRTFB…to provide adequate testing in support of development, acquisition, fielding, and sustainment of defense systems; and, maintain awareness of other T&E facilities and resources, within and outside the Department, and their impacts on DoD requirements."

From this mission, the Director established the TRMC's Vision and Goal, as outlined in last year's Report. These were updated in 2010 with some added long-term goals, and the 2011 goals. Ultimately, the TRMC's Vision and Goals link directly to those goals set forth by the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) for the organization. Shown below in Figure 2 are the Goals and Objectives for 2010 and 2011, which we'll meet through interdivisional TRMC team efforts.

Vision: "The Department of Defense test and evaluation workforce, infrastructure, and funding will be fully capable of supporting the Department with quality products and services in a responsive and affordable manner."

2010 Goals:

1. Ensure seamless integration of the Tri-Service T&E Executive Agent process to the maximum extent possible into the development of the FY 2010 DoD Strategic Plan for T&E Resources, and publish the Plan by June 2010.

2. Develop and implement the JMETC Program Plan for FY 2010, and develop and submit a position paper in support of POM12, which will provide for the increased institutional funding needed to execute future growth of the capability.
3. Continue to develop and refine a more efficient process for developing the T&E Budget Certification Report and applicable reports to Congress.
4. Influence planning for the Department's oversight of range sustainment, and ensure T&E community sustainability issues are addressed.
5. Publish DoD Instruction 3200.18, and, with the full cooperation of the Military Departments and in support of the DoD Strategic Plan's assessments and recommendations, identify test range and facility candidates for possible downsizing, removal from, or inclusion into, the MRTFB, or total divestiture, and arrive at a revised membership list for the MRTFB.
6. Finalize the development, and execute a prototype demonstration of the MRTFB capabilities directory.
7. Promote and improve the TRMC organizational operations and align employees' contributions toward achieving the TRMC vision.

***2011 Long-term Goals to achieve the vision*:**

1. Support the objectives of AT&L and the Department by ensuring the organization is *efficiently* resourced and manned to execute its mission and perform required duties.
2. Align the organization's investment programs with the Services' and Defense Agencies' T&E I&M programs and identify a process that ensures the Department's investment in T&E capabilities is optimized at the corporate level.
3. Achieve a comprehensive corporate strategic planning process across DoD, other government, and non-federal T&E infrastructure communities.
4. Achieve interdependency between the test and training infrastructure investment and development.
5. Improve contribution to mission by conducting and documenting studies.
6. Extend strategic planning, test infrastructure oversight, and budget oversight efforts to include special access program requirements.

Figure 2: 2010 and 2011 TRMC Goals and Objectives

The TRMC accomplished its goals and objectives through a team effort with the Services. One example is the coordinated investment across its three programs. Figure 3, below, illustrates the synergy of the T&E / S&T program, CTEIP, and JMETC through aligned investment to support the needs identified by the DoD's Strategic Plan for T&E Resources.

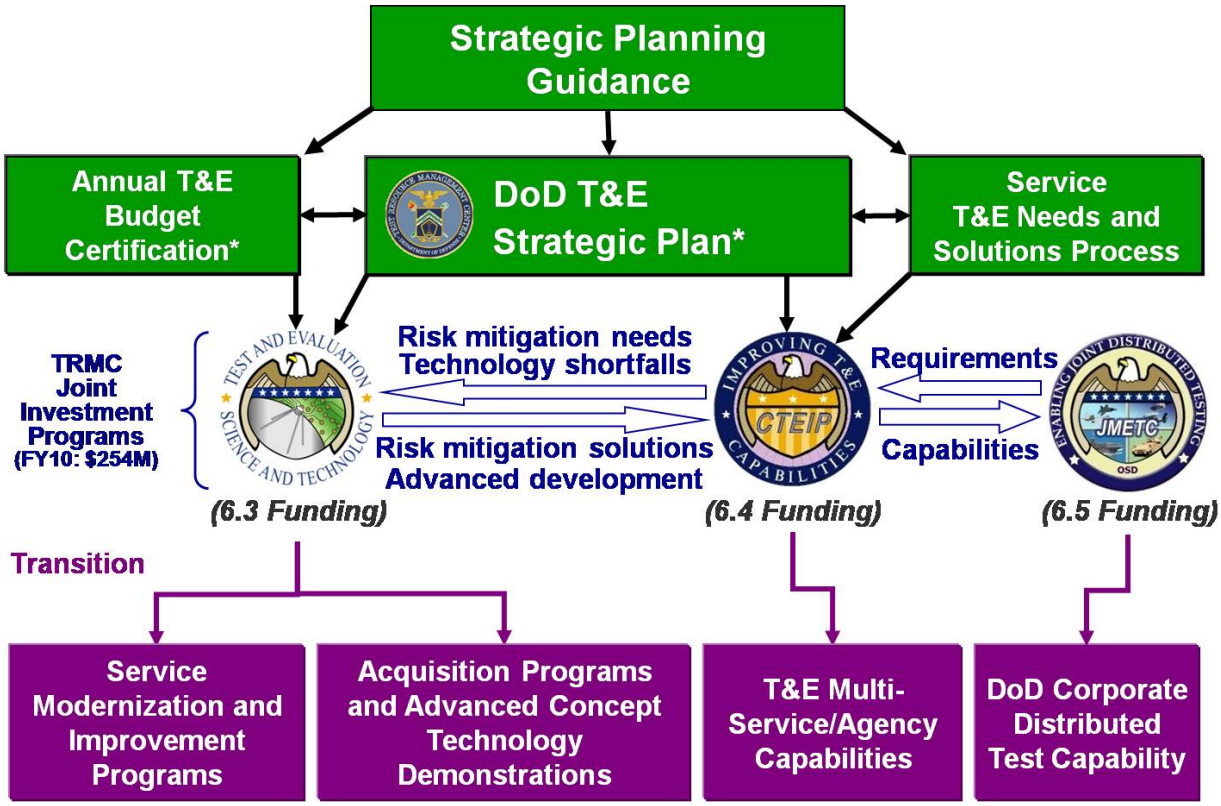

Figure 3: Synergy of T&E / S&T, CTEIP, and JMETC through Aligned Investment

3.0 State of the T&E Resources:

The 2010 Strategic Plan for DoD T&E Resources identified shortfalls (gaps, issues, and concerns) for each of the T&E resource components necessary to provide T&E capabilities. This is one critical element of DoD T&E Resource assessment. Other equally critical elements are the trends in a) investment, b) modernization, c) sustainment, d) divestment, and e) manpower for the individual ranges as they describe the effectiveness and efficiency of the T&E enterprise. As TRMC continues to improve the Strategic Plan, we will work toward assuring balanced resources in all of these critical elements. Figure 4 depicts the key elements of these T&E resources, and how they are used to produce T&E capabilities.

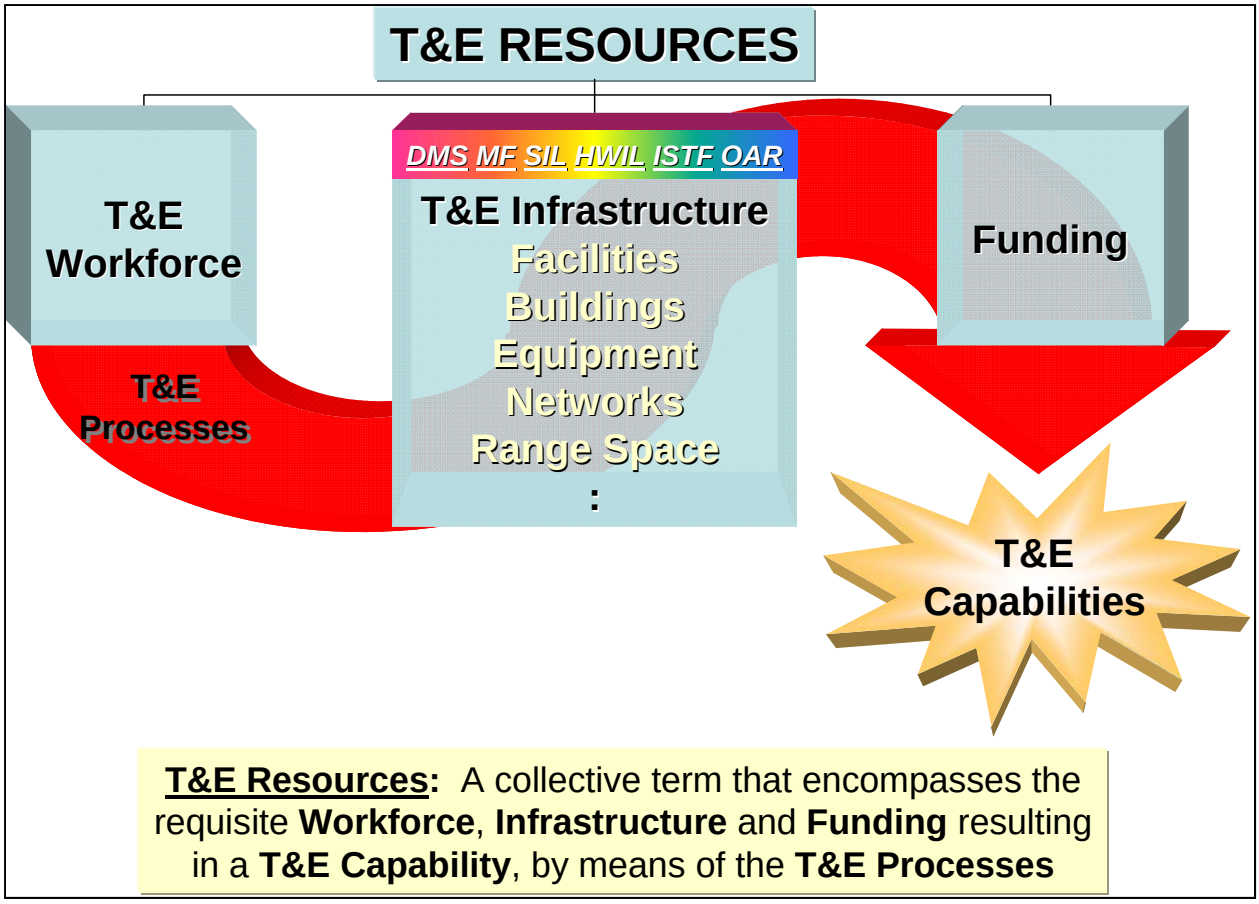

Figure 4: T&E Resources

The following key elements were considerations in assessing the state of the DoD T&E Resources:

(1) T&E Workforce: Military, civilian, and contractor personnel who provide the expertise and skills necessary to operate, maintain, sustain, and improve the T&E infrastructure. The personnel also execute and expend funding, and implement processes for providing T&E capabilities.

(2) T&E Infrastructure: The facilities, ranges, and all other physical assets such as buildings, instrumentation, networks, and range space, and frequency spectrum used to conduct DoD T&E.

(3) T&E Funding: The combination of Investment and Operating funding to support and execute the DoD T&E mission.

(4) T&E Processes: The methods and procedures used by the T&E workforce to provide T&E capabilities and associated data products.

(5) T&E Capabilities: An ability to conduct test and evaluation using T&E resources and processes to achieve T&E objectives.

3.1 Infrastructure Assessment:

The T&E community continually assesses the current state of its infrastructure to determine both near and far-term needs. One area where there are capability deficiencies is in Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR). This assessment is based on the growing complexity and increased emphasis on net-centric operations testing and the paradigm shift to modeling and simulation (M&S) for testing in this environment. Space Combat is improving the focus of DoD for T&E capabilities through a multi-agency and multi-service Joint Analysis Team (JAT). However, new technology and infrastructure focus areas, such as Artificial Intelligence (AI), Cyberspace, and Unmanned and Autonomous Systems (UAAS) will present future T&E capability challenges.

System of systems (SoS) testing is placing a growing demand on the T&E infrastructure with increased emphasis on M&S. This demand results in the need to conduct test operations in a joint live-virtual-constructive (LVC) environment. As the T&E community embraces the technical challenges posed by these intricate net-centric programs, it will need to develop and put into effect processes and methodologies to conduct effective testing. Several Office of the Secretary of Defense (OSD) and Military Department-led activities are currently underway to address these issues. However, OSD must monitor closely these activities to ensure the availability of these necessary T&E capabilities in time to support future SoS testing.

Greater usage of the T&E ranges by DoD training communities is affecting range space and frequency spectrum availability for T&E missions. External issues including environmental, energy, spectrum usage requirement, and changes mandated by the Federal Communications Commission (FCC) further aggravate this multidimensional encroachment issue.

3.2 Workforce Assessment:

Annually, the TRMC assesses elements of the Department's T&E Workforce in conjunction with a broader review of test facilities and resources. The "T&E Workforce" is comprised of individuals in several readily defined groups, as well as T&E personnel that are resident in over 100 DoD organizations, who at present cannot be readily identified.

The readily identified T&E workers include military and civilian personnel in the following aggregations:

- The Major Range and Test Facility Base (MRTFB) consisting of units in 24 designated MRTFB Activities, as specified in DoD 3200.11. This aggregation, under the oversight of the Director, has been the TRMC's primary focus thus far;
- The "T&E Career Field" component of the Acquisition Workforce (also known also as the AT&L Workforce) which is now under the oversight of the Deputy Assistant Secretary of Defense for Test & Evaluation ; and,
- The Components' Operational Test Agencies (OTAs).

Additionally, as noted above, a significant number of DoD military and civilian personnel are also involved in the planning and execution of T&E activities, either on a primary or collateral basis, on either a full or part-time basis. The TRMC is currently evaluating several approaches to identifying other major organizations performing T&E at a significant level with a view to incorporating the T&E personnel in those organizations into the TRMC's government T&E Workforce demographic database.

Figure 5, below, lists the major T&E Workforce Groups..

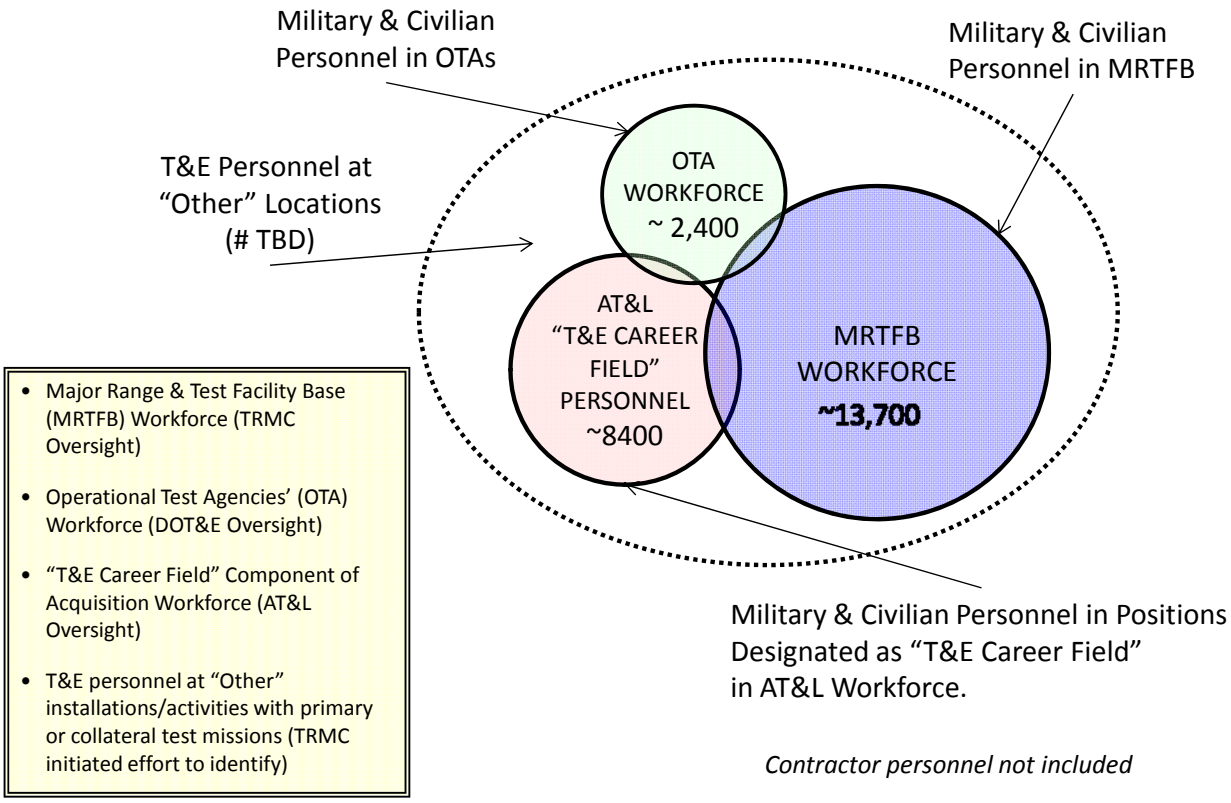

Figure 5: Composition of the DoD T&E Workforce

Thus far, the TRMC has compiled an MRTFB military and government civilian personnel database spanning the years 2005 – 2010. This is not yet enough data for significant trend analysis, however with the addition of the FY 2011-2012 data, it will provide an excellent base for assessing the changes that began occurring in 2010, when the congressionally mandated contractor in-sourcing effort started, and immediately thereafter with the phase-out of NSPS. Figure 6, below, depicts the MRTFB military and civilian workforce for FY 2010.

DISA/JITC Military count is based on work-years—not actual personnel. The personnel records of military personnel who support JITC are associated with their respective military UICs, not the JITC UIC. Consequently we cannot identify their specific personnel records for inclusion in the demographic analysis and must instead resort to using work-years for the personnel count.

MRTFB Workforce Profile - 2010				
Service	Military Strength	Civilian Strength	Total Workforce	% Total Workforce
U.S. Army	60	3,116	3,176	23.1%
U.S. Navy	572	1,752	2,324	16.9%
U.S. Air Force	2,762	5,182	7,944	57.7%
Defense Agency	62	258	320	2.3%
TOTAL	**3,456**	**10,308**	**13,764**	**100.0%**

Figure 6: MRTFB Profile--FY 2010

Here we note that the demographic data compiled does not include contractor personnel—there is no realistic way to compile contractor demographics. However, annually the MRTFB Activities are required by the Financial Management Regulation to submit various reports, including workforce ***work-years*** for civilian, military, and contractor personnel. These data, which appear in Figure 6, indicate that the workforce downtrend of the last decade has leveled off and that top line workforce totals have been relatively steady for the past three years.

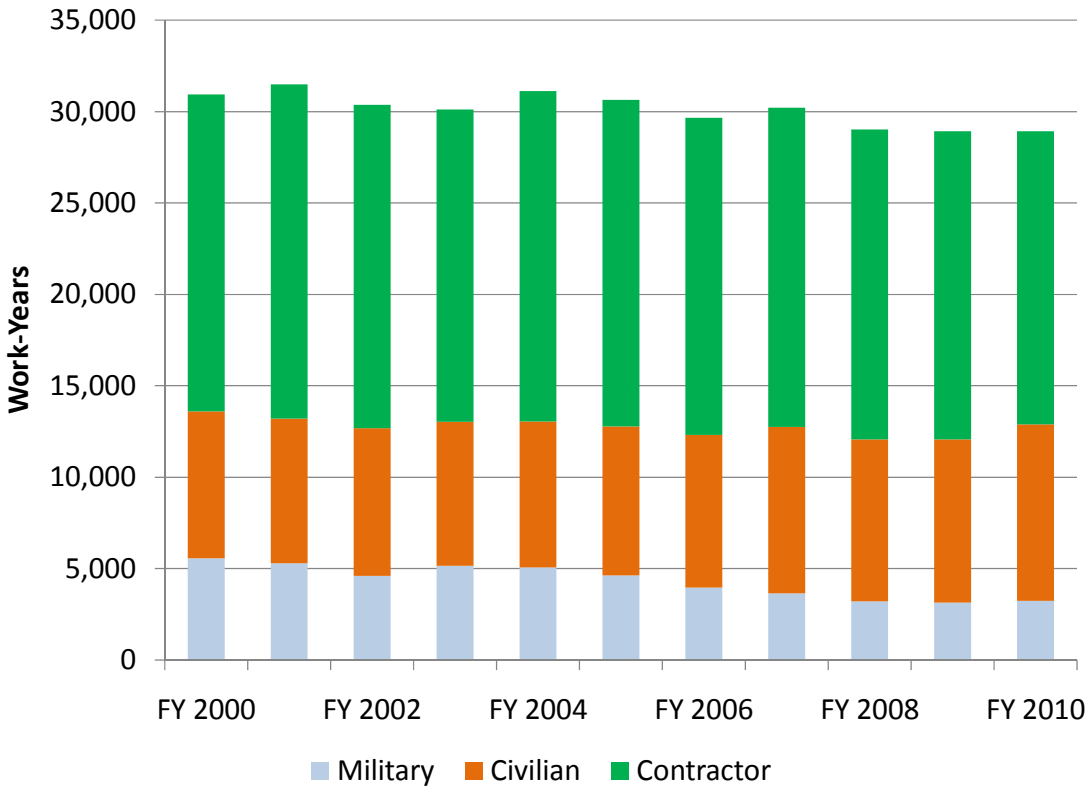

Figure 7: MRTFB Workforce Profile (FY 2000- 2010)

As for the demographic analyses of the MRTFB Workforce which are being undertaken bi-annually, a wealth of information about the occupational characteristics of the workforce, age— length of service— retirement eligibility— education demographics, and—as noted elsewhere in this Report, then MRTFB Workforce occupational composition has been profiled, yielding invaluable data to use in assessing the capability of the workforce to accomplish the T&E mission.

3.3 Funding Assessment:

While there are many fiscal pressures on the Department, funding provided for T&E Infrastructure remained at nearly four percent of the total DoD Research, Development, Test and Evaluation (RDT&E) budget for each of the last five fiscal years. As the chart below demonstrates, funding for T&E Infrastructure has been relatively stable since implementation of the MRTFB funding policy in 2006. This is due, in part, to efforts taken by the TRMC during budget formulation process to assess the adequacy of funding for the T&E accounts as required by Title 10 United States Code, Section 196(e), Certification of Budgets. During the FY 2011 T&E budget formulation process, both the Army and the Navy proposed T&E funding reductions for FY 2012 - FY 2015. The TRMC was concerned that these decreases would lead to a loss of T&E capabilities and significantly increase risk in meeting critical test objectives. Because of these concerns, both the Army and the Navy made a partial restoration of the T&E funds, and during the FY 2012 T&E budget formulation process, the Army significantly increased funding to three investment accounts and the Navy restored the appropriate reductions. The TRMC did certify the Army, Navy, Air Force, and Defense-Wide Agencies FY 2011 T&E budgets as adequate and balanced.

Other efforts in 2010 involved assessing proposed changes to the composition and related funding of the MRTFB facilities, chartering AT&L Joint Analysis Teams to determine the appropriate funding amounts, and responsible Component(s) for DoD Space Ranges and Counter-Improvised Explosive Defeat test assets.

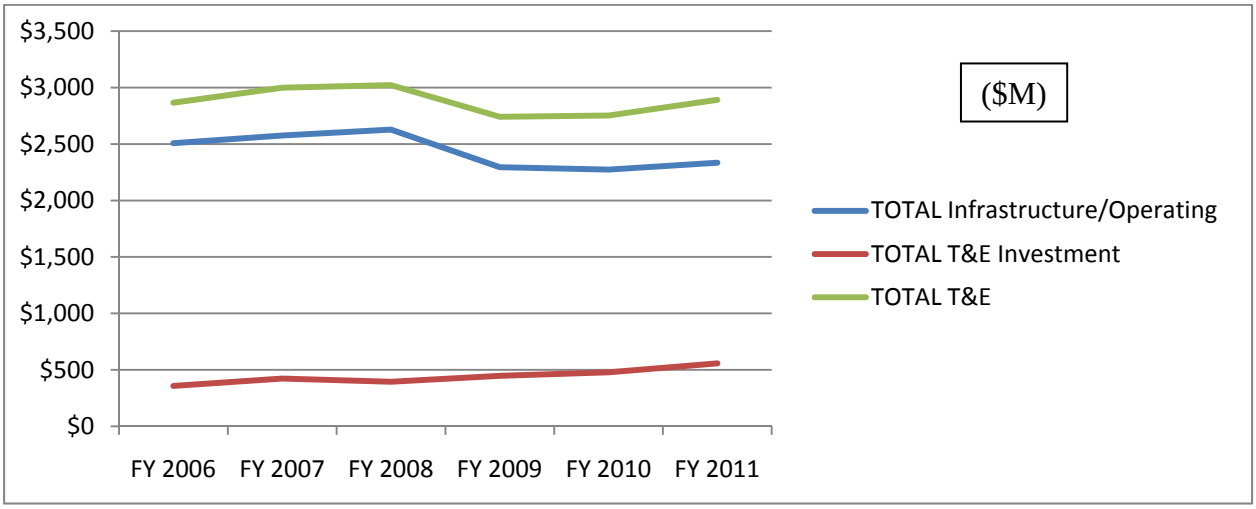

Figure 8: Test and Evaluation Funding (FY 2006 – FY 2011)

4.0 FY 2010 Accomplishments and FY 2011 Plans:

The TRMC achieved many notable accomplishments this past year to include adjusting the Strategic Plan biennial publication to even years with completion of the 2010 Strategic Plan for DoD T&E Resources. In doing so, the TRMC aligned the Strategic Plan with the Planning, Programming, Budgeting, and Execution (PPBE) process, enabling the Military Departments to address any identified T&E capability needs in the next POM cycle.

TRMC executed corporate oversight of infrastructure investment and operations with NASA and other federal agencies, and assisted the Office of Science and Technology Policy in accomplishing other related actions. TRMC also vigorously promoted Major Range and Test Facility Base outreach opportunities — refocused MRTFB Annual Review on Service test roadmaps, held our fifth successful Annual Review in August 2010, published the TRMC Annual Report for 2009; and developed initial products of a T&E capabilities portfolio focusing on the MRTFB.

During 2010, CTEIP again made significant progress in the development and deployment of test infrastructure capabilities. This year 21 Joint Improvement and Modernization (JIM) projects continued in execution, and a number of them successfully completed development and began supporting test activities across the MRTFB and other ranges.

Funded at $93.3M in FY2010, the T&E/S&T Program made significant progress in the 103 projects executed across the program's seven test technology areas: Advanced Instrumentation Systems Technology; Advanced Propulsion Test Technology; Directed Energy Test; Multi-Spectral Test; Net-centric Systems Test; Spectrum Efficient Technology; Unmanned and Autonomous Systems Test.

Events of 2010 demonstrated clearly the cost effectiveness of the JMETC Program. Through reuse of the JMETC sites and security agreements, 70 JMETC customers were saved the expenses of acquiring network equipment, processing security agreements, and testing the equipment installation and network configuration.

DoD Instruction 3200.18, was published in cooperation with the Military Departments and Agencies. The instruction establishes criteria for identifying the composition of the MRTFB at the T&E facility and range level and outlines the procedures for requesting changes to the composition. This instruction ensures that the MRTFB provides a broad base of T&E capabilities and is managed and operated under uniform guidelines across the DoD Components.

4.1 Strategic Planning:

The Strategic Plan for DoD Test and Evaluation Resources fulfills Title 10, United States Code, Section 196 enacted by Section 231 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003, Public Law No. 107-314 (2002). The Strategic Plan for DoD T&E

Resources provides an overall vision of the T&E infrastructure, investment, and workforce necessary to achieve desired T&E capabilities to support the testing of current and future warfighting capabilities.

The 2010 Strategic Plan for DoD T&E Resources reflects the impact of overarching national and departmental strategic guidance and transformational strategies that has occurred since publication of the 2009 Strategic Plan for DoD T&E Resources. The goals of the Strategic Plan are to translate national and departmental strategic guidance into strategic direction for the sustainment, improvement, and modernization of the DoD test resource infrastructure; to assess the current state of T&E capabilities; to guide the Military Department's and Defense Agencies' investment processes; and to provide a foundation for T&E budget certification, spanning a period of ten years. It assesses and analyzes requirements that are developed based on this strategic guidance and the test capability requirements.

The 2010 plan is the fifth produced by the Test Resource Management Center. It presents analysis of the five-warfighting domains: Air, Land, Sea, Space and Cyberspace, and twelve key focus areas providing an assessment of the key topical challenges facing the test and evaluation community and prioritized solutions to address capability shortfalls. The 2010 Strategic Plan also introduces TRMC efforts in International T&E with development of the first TRMC International Engagement Strategy as well as addresses challenges involving the defense of the spectrum and efficiency management. A new section on Future Focus Areas was added to identify new areas that may need to be addressed in depth. The topics included advanced material (e.g. nanotechnology and metamaterials), medical technologies, and networked persistent technologies. Lastly, the 2010 Strategic Plan begins to align current and proposed T&E investment activities with the driving T&E requirements.

The 2010 Strategic Plan identifies 14 T&E requirements resulting in specific capability needs and recommended actions for the near-term (FY2012-2016). An abbreviated summary of these is provided in the following:

- Develop roadmap with implementation plan to achieve secure flight safety capability for space launch and ballistic missile programs that satisfies NSA objectives.
- Identify FYDP funding to design, develop, and install node concentrators and management software to address the capacity needs of the Joint Information Operation Range (JIOR) in developing and fielding cyber warfighting capabilities.
- Develop a joint environment for biometric identification testing and the required conformance test suite to support distributed biometric T&E.
- Develop a multi-Service implementation plan to make better use of C-band for telemetry to offset existing band congestion on L and S bands, ensuring test activities are responsive to acquisition requirements.
- Determine alternatives to test full-size satellite sensor and communication systems in a simulated space environment to mitigate performance limitations and operational life costs resulting from on-orbit test of spacecraft.

Near-term modernization efforts will need to focus on providing required capability more affordably to include reducing operations and maintenance costs, developing reusable tools and simulations, reuse of existing government infrastructure, and efficient use of existing T&E ranges facilities and test support assets. An area of growing concern to the Department involves increased Reliability and Maintainability (RAM) failures associated with extended deployment of traditional and non-traditional warfighting capabilities. This will be addressed in detail during preparation of the 2012 Strategic Plan with emphasis on the need for improved T&E methodologies, capabilities, and skill sets required to identify and resolve RAM issues during system development.

The 2010 Strategic Plan identifies seven T&E requirements, which the T&E infrastructure will need to address over the far term (FY2017+):

- Cyberspace T&E Capability: DoD must continue to improve the fidelity of CNO and IA capabilities to proactively counter and respond to cyber threats and maintain freedom of action in cyberspace. The T&E infrastructure for the cyberspace domain is in its infancy and needs to be established.
- Cross-Range Integrated T&E Capability: Increased need to test cross-range capable systems will drive requirements for cross-range safety and data interoperability improvements. These new capabilities may also support joint training for the same systems.
- AI T&E Capability: As the level of autonomy of AI-enabled systems increases, these systems will have the ability to synthesize a broad range of sensor input data, make decisions based on prior experience, and adapt to new situations. DoD must develop the infrastructure, policy, and workforce to evaluate these systems in ways that will challenge their abilities to adapt and make decisions.

Within this increasingly complex and sophisticated testing environment, the T&E community is challenged to employ metrics and cost-benefit analyses to justify expenditures and investments. This raises serious concerns for an aging infrastructure in need of improvement and modernization. For the next Strategic Plan, the TRMC will examine sustainment and modernization of the existing T&E infrastructure to understand better its reliability, effectiveness, and readiness to support future demands. The Air, Land, and Sea Combat Domains are adequate to meet requirements and have resources under development for known near- and mid-term T&E requirements. The Space Combat Domain has a number of needs reflective of maturing infrastructure and increased capability acquisition systems. Further, the pace of new threat system development and technology advances can outpace T&E capability need identification and investment in areas such as cyber, AI, and biometrics. These challenges have an impact on DoD's ability to understand the capabilities and limitations of systems prior to making acquisition decisions and/or fielding the systems.

The 2010 Strategic Plan for DoD T&E Resources presents a comprehensive and cohesive Department-wide plan. The plan links directly to current and projected warfighting needs and provides traceability for T&E requirements. With the exception of some significant strategic challenges and investment concerns posed by new and emerging technologies, current T&E capabilities and budgeted resources will meet DoD's near- and mid-term T&E capability needs.

4.2 Test Resources:

4.2.1 The Budget Certification Process:

TRMC is required to review the Military Departments' and Defense-Wide Agencies' test and evaluation (T&E) budgets annually, and submit to the Secretary of Defense (SecDef) a report commenting on the adequacy of the proposed budgets, and whether the proposed budgets provide balanced support for the Strategic Plan. Based on FY 2011 budgets, the Director of the TRMC reported to the SecDef that the FY 2011 T&E budgets of the Army, Navy, Air Force, and Defense-Wide Agencies met the certification criteria of adequacy and balance.

The TRMC's baseline for assessing adequacy and program balance of the DoD component's FY 2011 proposed T&E budgets was an analysis of budget variations. This assessment focused on funding variations in the T&E resources, T&E gap issues identified during development of the calendar year 2009 DoD Strategic Plan for T&E Resources, and issues identified in the FY 2010 Budget Certification Report. In addition, areas of interest for review in the proposed FY 2011 budgets and newly identified issues within the proposed FY 2011 budgets, from the following two perspectives:

- **Assessed funding adequacy by:** Comparing Operating and Investment Accounts of the FY 2010 Appropriated Budget to the proposed FY 2011 Budget Submission. The DoD Components provided an explanation and supporting documentation for significant year to year funding changes. The TRMC also identified past funding levels for T&E Operating and Investment accounts from FY 2006-2011. The funding history provides an historical view of actual funding since the budget certification report only assesses one year of funding.
- **Assessed program balance by:** Evaluating the level of investment within a program compared to T&E gaps identified in the calendar year 2009 Strategic Plan.

4.2.2 Operation Budget Adequacy Issues:

Throughout the Department's FY 2011 program and budget review process, the TRMC worked with OUSD(C), CAPE, and the Components to identify issues, propose solutions, and resolve funding issues. The three prioritized funding issues identified and resolved were:

Army: The TRMC certified the Army T&E FY 2011 proposed budget as adequate and balanced.

Navy: The TRMC certified the Navy T&E FY 2011 proposed budget as adequate and balanced.

Air Force: Air Force Major Range and Test Facility Base Contractor to Civilian Conversion Initiative – Pay Shortfall – Department calculations assumed the civilian payroll costs would be 60 percent of the contractor baseline salary. The TRMC identified an issue with the Air Force implementation of the conversion as the Air Force was converting at 30 percent to 41 percent of the contractor baseline salary. The Air Force FY 2011 to FY 2015 T&E budget proposal would have led to an approximate $159 million civilian pay shortfall. The Department directed the Air Force to restore funding to meet guidance. The restored funding varies per year; however, funding is aligned with the TRMC assessment.

Defense-Wide: The TRMC certified the Defense-Wide T&E FY 2011 proposed budget as adequate and balanced.

4.2.3 Investment Budget Adequacy Issues:

Army: Army High Energy Laser Systems Test Facility (HELSTF) – An Army June 2009 Quick Look Study determined HELSTF not adequately funded for modernization and sustainment. A joint TRMC and High Energy Laser Joint Technology Office (HEL-JTO) report also determined HELSTF not adequately funded for modernization and sustainment. However, the Army did not address this funding shortfall in its FY 2011 T&E budget. The TRMC assessed this shortfall, if not addressed by the Army, would lead to unacceptable risk to HELSTF test capability to future acquisition programs. The Department directed the Army to provide an additional $1.8 million to the HELSTF account.

Navy: Navy T&E Capability and Funding Reductions – During Navy's FY 2011 T&E budget formulation process, the Navy proposed significant T&E funding reductions for FY 2012 – FY 2015, as part of the Navy's FY 2010 President's Budget re-baseline and PR FY 2011 budget submission. The TRMC was concerned that this funding decrease would lead to a loss of T&E capability and significantly increased risk in meeting critical test objectives. The Department directed the Navy to restore $10.2 million in FY 2011.

Air Force: The TRMC certified the Air Force T&E FY 2011 proposed budget as adequate and balanced.

Defense-Wide: The TRMC certified the Defense-Wide T&E proposed budget as adequate and balanced.

4.2.4 Additional Concerns:

Finally, the TRMC Director noted that due to increasing pressures upon the DoD budget, there is an increasing trend for the Military Departments, Defense Agencies, and other DoD Components to propose budget reductions as "savings possible through the anticipated

realization of infrastructure and operating efficiencies." While the TRMC understands that resource realignments are necessary to meet critical requirements as the components develop their budgets, and while the TRMC fully supports efforts to achieve efficiencies in the execution of those budgets, future budget certifications will require demonstrated realization of those "efficiency" or "savings" projections. To address this, the TRMC is taking a three-pronged approach: developing an MRTFB capabilities directory to monitor existing capabilities; establishing a process through DoDI 3200.18 for assessment and adjudication of changes to the MRTFB; and establishing metrics to monitor budget, infrastructure, and personnel. These three actions will enable the TRMC to identify longer-term trends in the overall health of the MRTFB that may not be readily identifiable from year to year.

4.3 Investment Programs:

4.3.1 Central Test and Evaluation Program (CTEIP):

The Central Test and Evaluation Investment Program (CTEIP): CTEIP was established in 1990 to improve the coordination and planning of DoD T&E capability investments. The program invests in T&E capabilities that will meet the test requirements of more than one Service. With an average budget of $160M per year, CTEIP funds about 50 projects or subprojects at any given time, all of which are in various stages of development. These projects range from quick assessments of new technologies to full-scale efforts to develop new test capabilities. Funding varies from several hundred thousand dollars to as much as $300M over the life of the project. While CTEIP operates under the oversight of the TRMC, the Services and Defense Agencies propose and execute CTEIP projects. CTEIP provides a coordinated process for funding T&E investments that leverage Service investments and ensures joint development, and follows best practices. CTEIP's processes also encourage reuse and the promulgation and use of standards.

During 2010, CTEIP again made significant progress in the development and deployment of test infrastructure capabilities. This year 21 Joint Improvement and Modernization (JIM) projects continued in execution, and a number of them successfully completed development and began supporting test activities across the MRTFB and other ranges. Summarized below are highlights of the 2010 CTEIP program.

Fielded T&E Capabilities:

Directed Energy Test and Evaluation Capability (DETEC). This Army-led project started in FY2004 and concluded this year with delivery of the final two capabilities--High Power Microwave (HPM) Narrowband Threat System A and A Prime--and the initial operating capability of the HPM Wideband Threat System. The Narrowband Threat System has been used this fiscal year in preparation for upcoming test events. Since 2004, DETEC has delivered 16 new capabilities that addressed 40 high-priority High Energy Laser (HEL) and HPM T&E requirements. New T&E capabilities delivered to four host ranges included: best practices methodologies; HPM test planning and safety software; and state-of-the art instrumentation, sensor systems, and threat emulators. All hardware capabilities are transportable to facilitate

usage within each range as well as throughout the MRTFB. The best practices methodologies and software tools are available to all T&E facilities. All of these new capabilities are currently in use supporting HEL and HPM weapons development testing, as well as HPM survivability and vulnerability testing. As an example, the HEL Target Reflected Energy Measurement (TREM) system is a T&E asset of the High Energy Laser Systems Test Facility (HELSTF) at White Sands Missile Range. Twenty-six (26) HEL TREM units were used by the Air Force Research Laboratory (AFRL) to conduct testing during FY2010; these units will also support 20kw solid-state laser lethality testing and future Joint High Power Solid State Laser (JHPSSL) program tests. As another example, the HEL Ground Test Irradiance Measurement (GTIM) system is being used by HELSTF to support ongoing and future solid-state laser testing.

Joint Advanced Missile Instrumentation (JAMI). This Navy-led project developed and deployed an advanced integrated instrumentation package for tri-Service small missile test and training applications. The JAMI system provides GPS-based time, space, position information (TSPI) hybrid receivers (for both missile and a subscale target applications); missile-based flight termination; and (limited) end-game scoring in a low-cost, modular package whose portability allows world-wide test and training. JAMI significantly decreases test costs by reducing the requirement to use expensive ground-based radar and video tracking systems, which also have limited altitude and range capabilities. The JAMI instrumentation package is modular with a separate TSPI unit, ground station, and flight termination safe and arm (FTSA) device. The JAMI TSPI unit provides mission control and/or Range Safety Officer missile location output within 3 seconds of launch, is updated every 64 milliseconds, provides position information accurate to within 7 meters in near-real time, and archives TSPI and reference data for post-flight analysis. JAMI TSPI components have been successfully demonstrated on the AMRAAM, Sidewinder, Hellfire, Tomahawk, and the MQM-107 aerial target. The JAMI ground station has been deployed to seven DoD ranges and three contractors, with additional deployments planned. The JAMI solid-state FTSA device and ground test set have completed design and initial testing with final safety certification pending.

Joint Mobile Infrared Countermeasures Test System (JMITS). This Center for Countermeasures (CCM)-led project developed a mobile, self-contained system that simulates surface-to-air-missile (SAM) threats. JMITS is the most advanced DoD T&E capability to conduct realistic testing of infrared countermeasures (IRCM) systems in an open-air environment while they are installed in their intended host aircraft. JMITS provides validated ultraviolet and infrared (UV/IR) missile signatures that are 100 times and 30 times brighter, respectively, than pre-existing simulators. Other capabilities include: 1) radiometers to measure return laser jam beam characteristics; 2) a UV/IR radiometric suite to calibrate the system and measure missile and false alarm source signatures; 3) a threat seeker suite with pre- and post-launch configurations to provide actual threat engagements and measure IRCM system effectiveness; 4) an atmospheric suite to characterize atmospheric conditions that impact IRCM systems; and 5) a flex-play test execution approach to provide more realistic operational testing scenarios.

Since delivery, the two transportable JMITS systems have been in nearly constant use at Edwards AFB, CA and the Naval Air Weapons Station (NAWS), China Lake, CA supporting the Department of the Navy (DoN) Large Aircraft Infrared Countermeasures (LAIRCM), CV-22 IOT&E, LAIRCM NexGen, and the Department of Homeland Security (DHS) counter-MANPADS programs.

Soft-Impact Location Capability (SILC). This Navy-led project developed a unique system to conduct long-range ordnance testing in shallow-water ocean impact areas safely and effectively. The SILC system acoustically determines the water impact point of land-, air-, and sea-launched munitions and missiles for both accuracy testing and recovery of payloads in water depths up to 100 meters. The system is transportable and can be used at a variety of shallow-water test ranges throughout the world. The SILC achieved its initial operational capability, successfully demonstrating all key performance parameters in Narragansett Bay, RI in August 2010.

Advanced Surface-to-Air Missile (SAM) Hardware Simulator Development - Integrated Technical Evaluation Assessing Multiple Sources (ITEAMS). This effort successfully completed an Advanced Russian Radar project. This project was initiated as a Congressional Add in FY2009. The effort developed a design for several specific subsystems of specific threat radar. During FY2010 DIA/MSIC led a risk mitigation to determine if the existing radar was suitable to support the enhanced features found in the ITEAMS design. Individual components were developed and bench tested with simulator system integration starting in April 2010. In September 2010, after 8 weeks of open-air, emitter-only testing, all original objectives were met. The surrogate radar will support a closed loop, skin track, simulator of the Advanced Russian Radar. Final risk mitigation subsystem design documentation and a detailed test report are pending.

Incrementally Fielded T&E Capabilities:

Advanced Communications Environment – Faithful Timeslot Messaging (ACE-FTM). This project will provide the Benefield Anechoic Facility (BAF), Edwards AFB, CA and the Air Combat Environment Test and Evaluation Facility (ACETEF), Naval Air Warfare Center Aircraft Division (NAWCAD), Patuxent River, MD with an augmented capability to simulate realistic, high-fidelity network environments for use in the development, evaluation, and operational testing of Link-16-equipped aircraft systems. Proof of concept for the system, and proof of concept for simulation of delay (Builds 1 and 2) were delivered to Edwards AFB in 2009. Signal attenuation and Digital Terrain Elevation Data, as well as Calibration (Builds 3 and 4) were installed to show that actual terrain data, as well as distance could be simulated. These third and fourth builds were delivered to Edwards AFB in 2010. Additional testing and TENA requirements were added in 2010. Factory acceptance, BAF installation, training, and ACETEF installation are scheduled for Oct 2010 through Jan 2011.

Significant accomplishments of projects continuing development in FY2010:

Common Range Integrated Instrumentation System (CRIIS). This project will provide Major Range and Test Facility Base (MRTFB) ranges with the capability to collect sub-meter time, space, position information (TSPI) and increased throughput of selected aircraft data bus information needed for advanced weapon systems testing. As the next generation GPS-based range data system, CRIIS replaces the aging Advanced Range Data System (ARDS). In FY2010, the CRIIS project completed a competitive risk reduction phase, successfully maturing the TSPI technology to TRL 6 and reducing the risk for the High Throughput Data Link (HTDL) development. The Phase II Engineering and Manufacturing Development (EMD) contract was awarded to Rockwell Collins Incorporated on 17 August 2010. Phase II includes CTEIP-funded development followed by Service-funded production and sustainment options.

Horizontal Fast Rise Electromagnetic Pulser (HFREMP). This project will provide Naval Air Warfare Center Aircraft Division (NAWCAD), Patuxent River, MD with an improved pulser for generating a High Altitude Electromagnetic Pulse (HEMP) early-time (E1) environment that meets current military standards for testing aircraft, mobile systems, and missiles. In FY2010, HFREMP completed assembly and testing at the contractor facility in San Leandro, CA; and phased component delivery to NAWCAD, Patuxent River, MD at the end of September 2010. Plans for FY2011 include installation and acceptance testing. Full operational capability (FOC) will be achieved by January 2011.

Space Threat Assessment Testbed (STAT) project Spiral 1. This project will provide Arnold Engineering Development Center (AEDC), Arnold AFB, TN with a ground test satellite component simulation capability that replicates the space environment and allows early design and performance assessments. STAT Spiral 1 successfully completed its Critical Design Review (CDR) in May 2010 and started procurement and fabrication activities. Plans for FY2011 include completion of facility modifications at AEDC, factory acceptance tests of major components, and integration testing of major chamber components. STAT Spiral 1 is scheduled to achieve initial operational capability (IOC) in 4Q FY2012 and full operational capability (FOC) in 1Q FY2013.

Subminiature Flight Safety System (SFSS). This project will provide tri-Service customers with a flight termination system (FTS) small enough to fit into the limited space available in many new missiles and other flight munitions. FY2010 activities included acquisition strategy approval and source selection activities, which ended with a development contract award by the Air Armament Center, Eglin AFB, FL in September. Plans for FY2011 include systems engineering activities through System Requirements Review (SRR) and System Functional Review (SFR).

Towed Airborne Plume Simulator (TAPS). This project provides tri-Service customers with the ability to measure the performance of missile warning systems (MWS) and infrared countermeasures (IRCM) systems mounted on U.S. aircraft. In FY2010, TAPS completed integration and performance testing including risk reduction with the Large Aircraft Infrared

Countermeasures (LAIRCM) NexGen Flight Test Pod (LFTP). Led by the Center for Countermeasures (CCM), White Sands Missile Range (WSMR), NM, TAPS will achieve its initial operational capability (IOC) early in FY2011 with the delivery of the validation report; delivery of all training materials and other documentation; and the application of several final enhancements to improve test performance. The TAPS is scheduled to support the LAIRCM NexGen Initial Operational Test and Evaluation (IOT&E) in the summer of FY2011.

Projects Started:

In FY2010, CTEIP started five Joint Improvement and Modernization (JIM) projects, including three previously planned projects and two new Congressional Add projects.

The three previously planned JIM projects are the Joint Distributed IRCM Ground Test System (JDIGS) project, the Joint Unmanned Aerial Systems Mission Environment (JUAS-ME) project, and the Multi-Level Security Joint/Coalition Network Environment (MLS-JCNE) project.

The JDIGS project is developing infrared countermeasures (IRCM) ground-test capabilities to address key testing shortfalls identified by the IRCM Test Resource Requirements Study (ITRRS) for improving helicopter survivability. The capabilities are built around a real-time distributed data link between installed systems test facilities (ISTFs) at the Navy Air Combat Environment Test and Evaluation Facility (ACETEF), NAVAIR 5.4, Patuxent River, MD; the Army Avionics System Test and Integration Lab (AV-STIL), Redstone Test Center (RTC), Redstone Arsenal, AL; the Threat Signal Processor in the Loop (T-SPIL), China Lake, CA; and the Guided Weapons Evaluation Facility (GWEF), Eglin AFB, FL.

JUAS-ME will provide the ACETEF, Naval Air Warfare Center Aircraft Division (NAWCAD), Patuxent River, MD; the Army Aviation and Missile Research, Development and Engineering Center, Redstone Arsenal, AL; and the Simulation and Analysis Facility (SIMAF), Wright Patterson AFB, OH with an immersive test capability for testing and evaluating unmanned aerial systems (UASs) and their control systems, sensors, weapon systems, and command and control systems in simulated operational mission environments including a representation of the National Airspace System (NAS). This project is currently in Phase 0, Requirements Development and Planning.

MLS-JCNE will provide a persistent interoperable and reusable Multi-Level Secure (MLS) and Cross Domain Solution (CDS) joint/coalition data management network architecture for the DoD RDT&E environment. The capability will be demonstrated at selected sites and made available for all other RDT&E facilities. This project is currently in Phase 0, Requirements Development and Planning.

The two new FY2010 Congressional Add projects are the Chinese long-range radar simulator, executing under the Advanced SAM Hardware Simulator Development – Integrated Technical Evaluation Assign Multiple Sources (ITEAMS) project, and the Savannah Combat Readiness Training Center (CRTC) Training Enabled Maneuver Instrumentation project, which continues to expand the Joint Gulf Range Complex test environment for network-enabled weapons.

4.3.2 T&E/S&T:

DoD launched the T&E/S&T Program in 2002 in recognition of U.S. development of advanced technology weapon systems, such as directed energy weapons and multi-spectral and hyperspectral sensors and seekers, with no corresponding advances in test technologies. T&E/S&T Program technology development projects typically begin at Technology Readiness Level 3 and mature to Level 6. Project results include test technology prototypes and demonstrations. The CTEIP and Service I&M Programs are the primary users of technologies developed by the T&E/S&T Program; as such, this program provides risk reduction for development of CTEIP and Service I&M test capabilities.

The T&E/S&T Program has achieved notable successes that are benefiting the test community. The Program is aligned with the *Strategic Plan for DoD T&E Resources* and continues to posture itself to provide the technologies necessary to close the test capability gaps identified in the Strategic Plan.

Funded at $93.3M in FY2010, the T&E/S&T Program made significant progress in the 103 projects executed across the program's seven test technology areas:

(1) Advanced Instrumentation Systems Technology

(2) Advanced Propulsion Test Technology

(3) Directed Energy Test

(4) Multi-Spectral Test

(5) Net-centric Systems Test

(6) Spectrum Efficient Technology

(7) Unmanned and Autonomous Systems Test

The 24 new projects initiated in FY2010 are developing technologies to improve our ability to accomplish the following:

(1) Provide non-intrusive sensors, data storage, and power sources for continuous, non-obtrusive T&E;

(2) Provide high-fidelity propulsion test environments and store separation test capabilities for high speed and hypersonic systems;

(3) Measure high-energy laser (HEL) and high-power microwave (HPM) energy on target;

(4) Conduct real-time, realistic, end-to-end T&E of multi-spectral and hyperspectral battlefield systems and infrared countermeasures (IRCM) systems;

(5) Test joint net-centric warfare architectures and tools using virtual representations of real-world networks; and

(6) Provide risk reduction for a telemetry network data collection environment that is robust, self-healing, and portable.

FY 2010 technology completions and transitions included the following:

(1) Advanced Instrumentation Systems Technology matured and integrated a chip-scale atomic clock into an underwater acoustic modem; this technology – which was delivered to the Naval Undersea Warfare Center Division, Keyport – significantly improved underwater test capabilities by increasing the test area and enhancing time, space, position information (TSPI) accuracy and data collection. This test technology area also developed high speed, high temperature probes that simultaneously measure gas turbine engine exhaust gas species, total temperature, total pressure, and Mach/flow angularity. This technology was delivered to Arnold Engineering and Development Center.

(2) Advanced Propulsion Test Technology successfully developed five ground test technologies that are now being integrated to build a small-scale aeropropulsion technology demonstration facility – the Hypersonic Aero Propulsion Clean Air Testbed (HAPCAT). Once complete, HAPCAT will be the world's most capable missile-scale scramjet facility and will pave the way for construction of a full-scale facility to support large, next-generation hypersonic weapon systems.

(3) Directed Energy Test projects delivered HEL test technology to the White Sands Missile Range Advanced Pointer Tracker (APT). The Bistatic Optical Imaging Sensor was integrated into APT, providing a hyperspectral imaging technology to determine laser weapon energy and effects on target. Additionally, the T&E Adaptive Optics System was integrated into APT to allow the effects of optical turbulence to be corrected with adaptive optics during T&E of HEL weapons. Furthermore, this test technology area delivered an HPM target board to the Air Force Active Denial System (ADS) Program Office at Kirtland AFB. This target board enables full spacial and temporal beam characterization of the ADS 95 GHz beam.

(4) Multispectral Systems Test delivered the Sub-Array Light Emitting Diode to the Army Program Manager, Aircraft Survivability Equipment. This technology can be programmed to match threat missile plumes for open-air range testing of missile warning systems.

(5) Net-centric Systems Test provided an Evaluation Capability Module and Flexible Analysis Services technologies for Joint Close Air Support distributed test execution during Test Week 2010. These technologies enabled analysis of mission threads and

message traffic between multiple distributed systems to provide interoperability assessments both as a quick look at the time of the scenario and for a full, detailed analysis subsequent to the event.

(6) Spectrum Efficient Technology completed the Enhanced Forward Error Correction (EFEC) project, which developed a suite of telemetry data stream error correction schemes that repair errors caused by multipath, fading, and data link loss. EFEC transitioned to the Range Commanders Council Telemetry Group as the first error correction standards included in the Inter-Range Instrumentation Group telemetry standards.

(7) Unmanned and Autonomous Systems Test transitioned a T&E distributed control framework to the Army Armament Research, Development and Engineering Center at Picatinny Arsenal. This framework is to be used for test planning and evaluation of the collaborative performance of heterogeneous unmanned and autonomous systems. The Defense Advanced Research Projects Agency is using this technology as a standard Government platform to evaluate autonomy algorithms from multiple vendors in the Learning Applied to Ground Robots Program.

In FY2011, with $97.6M in funding, the T&E/S&T Program will continue ongoing projects and launch new technology developments, including test technologies to support the following:

(1) Accurate TSPI for testing in Global Positioning System (GPS)-denied environments;

(2) Clean air and variable Mach number technologies for hypersonic aeropropulsion ground test;

(3) Advanced T&E methods to characterize ablation for ballistic and maneuvering reentry vehicles;

(4) Sensors to characterize the electric and magnetic fields of the Navy Electromagnetic Railgun;

(5) A field strength sensor network to measure the wide area effects of an HPM weapon, such as that being developed in the Air Force Counter Electronics HPM Advanced Munitions Project;

(6) Testing of missile warning, IRCM, and hostile fire indicator systems;

(7) Emulation of cyber threats and the effects of a cyber attack across distributed networks;

(8) Frequency management tools, network management tools, and Transmission Control Protocol variants for the telemetry environment; and

(9) Tools for T&E of unmanned and autonomous system performance with emphasis on learning and autonomous interaction with the battlespace, other autonomous systems, and humans.

Additionally, the T&E/S&T Program will continue to perform risk reduction and technology maturation for CTEIP projects including:

(1) Next Generation Range Support Aircraft;

(2) integrated Network Enhanced Telemetry (iNET);

(3) Joint Distributed IRCM Ground Test System (JDIGS); and

(4) Interoperability T&E Capability (InterTEC).

Finally, T&E/S&T will perform risk reduction and technology maturation for high accuracy TSPI and a high throughput, spectrally efficient data link in support of the Common Range Integrated Instrumentation System, a CTEIP-funded Tri-Service project to replace the current aging Advanced Range Data System. Moreover, the T&E/S&T Program will continue to mature technologies needed to reduce engineering development and integration risks for the CTEIP-funded Subminiature Flight Safety System, which is developing a very compact, modular flight safety package that will support testing of next-generation extended range munitions.

4.3.3 JMETC:

Since its establishment in FY 2007, the JMETC Program has proven to be a cost effective, time saving, DoD-wide infrastructure capability for linking distributed facilities and enabling customers to test and evaluate warfighting capabilities in a joint context. Having just ended its fourth year, the Program has provided the T&E community with an infrastructure capability that supports testing across the full spectrum of the acquisition process. JMETC has supported Developmental Testing, Operational Testing, Interoperability Certification, and Joint Mission Capability Portfolio Testing as part of the twenty-five major distributed test events conducted since the establishment of the Program. JMETC provides a readily available, persistent connectivity between testing facilities with standing network security agreements, common integration software for linking sites, and accredited test tools for distributed testing. JMETC underwrites this capability with a dedicated customer support team for all of JMETC's products and testing activities. JMETC also provides a test capability aligned with the Joint National Training Capability (JNTC) in that both use the Test and Training Enabling Architecture (TENA), and have an established capability to peer the JMETC distributed test infrastructure to the JNTC Joint Training Enterprise Network. Further, JMETC's resource planning considers investments with the US Joint Forces Command's (JFCOM) JNTC as well as other existing integrated Military Department, and industry systems engineering, test, and training capabilities. JMETC's goal is to achieve consistent compatibility between the test and the training distributed event infrastructures while leveraging each other's investment and development activities.

In FY 2010, with only 15% of the institutional funding intended for establishment of the program, JMETC made significant progress in accomplishing the objectives of the "Testing in a Joint Environment Roadmap." Summarized below are the FY 2010 highlights of JMETC's pursuit of these objectives to create a persistent corporate capability for testing in a joint environment.

- JMETC supported multiple acquisition programs and major distributed test events such as: Air Ground Integrated Layer Exploration (AGILE) Fire 10-2 and 10-3; B1-B Fully Integrated Data Link Testing (FIDL); B-2 Spirit Integrated Collaborative Environment (ICE) Data Link Testing; Battlefield Airborne Communications Node (BACN) Joint Urgent Operational Need (JUON) (Development Test/Operational Test (DT/OT)); United Endeavor 10-1; Joint Integrated Air and Missile Defense Organization's (JIAMDO's) Joint Sensor Integration and Correlation/Decorrelation Integration Test; Joint Expeditionary Forces Experiment (JEFX) 10-1, 10-2, and 10-3; Broad Area Maritime Surveillance System (BAMS) Live, Virtual, Constructive (LVC) Distributed Event (DE) in conjunction with Unmanned Aircraft Systems in the National Airspace; Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (JC4ISR) Interoperability Test and Evaluation Capability (InterTEC) System Integration Test; Test and Training Enabling Architecture (TENA) Testing; JITC Joint Interoperability Tests; Joint Close Air Support (JCAS) Distributed Test; and Joint Surface Warfare (JSuW) Joint Capability Technology Demonstration (JCTD). In addition, the JMETC distributed test infrastructure had weekly activity by its customers for non-major event testing.
- JMETC, in FY 2010, increased its customer base to include the Small Diameter Bomb, Brigade Combat Team Modernization Program, Joint Integrated Air and Missile Defense's Joint Track Manager, and Multi-Mission Maritime Aircraft (MMA).
- In FY 2010, JMETC expanded and improved the JMETC distributed test infrastructure through the addition of twenty sites (58 total) to the infrastructure. The Army has confirmed plans to transition distributed test services (e.g., Cross-Command Collaboration Effort, etc.) to the JMETC infrastructure and we continue coordination with the Navy to realize their vision to bring together the Naval RDT&E infrastructure, tying it to Industry and other Services.
- JMETC established the DoD Information Assurance Certification and Accreditation Process (DIACAP) Tiger Team in FY 2009. The Tiger Team's purpose was to identify issues/impacts with current DIACAP implementation and to generate actionable recommendations to DoD Senior Leaders to improve DIACAP policy and/or implementation. This effort targets improving the negative effect on distributed testing of the non-uniform implementation of security policies among the Services. The Tiger Team has participation by representatives of JMETC, the Services, JMETC site locations, and industry. The Team Identified 38 issues captured in four categories: DIACAP Implementation, Enclave Certification and Accreditation, Platform Information Technology and Tools and Implementation Guidance. The Team completed and disseminated the final Report in FY 2010 and is currently working to implement the report recommendations.
- The TRMC completed the "Joint Distributed Test Infrastructure Capabilities-Based Assessment (CBA)." The Joint Training Functional Capabilities Board, in coordination with Service advisory members of the T&E community, recommended this assessment in response to a Joint Capabilities Board Preliminary Review of Assessment in July 2007. The recommendation, documented in the Joint Requirements Oversight

Counsel (JROC) Memorandum 279-07, December 10, 2007, focused on three potential gaps in the Joint distributed test infrastructure. JMETC divided the CBA into three independent study objectives/study tasks as follows:

1) Implementation of IPv6 at Test Facilities and Laboratories;
2) Applicability of Service Oriented Architectures (SOA) to Support Distributed Testing; and
3) Test Infrastructure Needed for Global Information Grid (GIG)-Enabled Systems.

Subsequently, the Training Functional Capabilities Board passed oversight of the task to the Net-centric Functional Capabilities Board (NC FCB). TRMC delivered the completed study to the Chairman, NC FCB (Joint Staff J6) on October 23, 2009. The results of the assessment were endorsed and accepted by the Net-Centric Functional Capability Board on July 9, 2010. The TRMC is charged with implementing those recommendations.

- JMETC continued its collaboration with the Military Department and Defense Agency T&E communities via participation in the DoD Testing in a Joint Environment Roadmap Senior Steering Group management process and with the members of the JMETC Advisory Group.
- In FY 2010, JMETC continued to work with the JMETC Users Group to facilitate development and incorporation of the highest priority improvements to the distributed test software and standard interfaces to meet customer requirements. JMETC conducted three JMETC Users Group meetings in FY2010 with an average of 250 participants from all DoD components. These meetings are with technical representatives from across the T&E Community. The Users Group provides a forum for JMETC users to share information, provide feedback, identify problems and solutions, and address requirements. The major focus of these meetings is on user requirements, networking, and security/information assurance topics. Special topics are added as pertinent. To date, these have included topics such as service oriented architectures, testing in a GIG-enabled environment, and distributed test support tools. Participation from all DoD components has been increasing from 140 participants in the first meeting (June 2007). In addition, through the Users Group, the JMETC program continued a significant effort to assess and evaluate "best-of-breed" distributed test tools for application by the entire DoD T&E community.
- From February to June of 2010 JMETC constructed an unclassified, For Official Use Only, infrastructure connecting test resources for a joint mission environment (utilizing live test resources interacting with virtual and constructive simulations). JMETC worked with the US Joint Forces Command (JFCOM) J8 to successfully complete the test planning and test operations for the Joint Close Air Support (JCAS) Distributed Test in response to the US JFCOM requirements for test data on the end-

to-end timing of every segment of the warfighter's call for close air support. The results of this test will be used to construct a baseline against which to measure improvements brought about by future system improvements. A by-product of this test was that JMETC was able to successfully develop and implement a mobile site infrastructure capability.

- Collaboration with the Training community continued via JMETC's dedicated, full-time liaison to the USJFCOM with the intent to synchronize investments, prevent duplication, and ensure compatibility between JMETC and the Joint National Training Capability. Key elements of this compatibility included the TRMC support to the Joint Command and Control Network Partnership and the JMETC support to the Joint Systems Integration and Interoperability Laboratory. Through these support relationships, the TRMC and JMETC supported the Command and Control Capability Portfolio Manager in conducting interoperability and information assurance assessments of both new and legacy C2 systems. Systems used the JMETC infrastructure, linked to the JFCOM J7 Joint Training Enterprise Network, to conduct these assessments. In this manner, testing of C2 systems took place during Combatant Command (COCOM) sponsored training events in a fully-operational joint context.

In FY 2011, JMETC will continue to provide and enhance a persistent, corporate capability for testing in a Joint environment. Highlighted below are the FY 2011 improvements envisioned for this capability.

- JMETC will enhance its capability to support distributed testing on the infrastructure by deploying a JMETC hardware/software tool suite to all JMETC sites, implementing TENA R6 as the JMETC middleware software, and providing computer network defense services for JMETC sites.
- JMETC will develop its planning support to on-going acquisition programs, particularly CVN-78, Army Brigade Combat Team Modernization Program, Joint Strike Fighter, Multi-Function Advanced Data Link, and F-22.
- JMETC will continue to support acquisition programs and major distributed test events: the combined JEFX and AGILE Events, F-22, BAMS; Army G-3/5/7 Execution Order; Joint Tactical Radio System (Airborne-Maritime Fixed [AMF], Ground Mobile Radio [GMR] and Handheld Mobile System [HMS]), JIAMDO Distributed Tests, Terminal Fury, and Austere Challenge. Additionally, experience has shown that JMETC will also be called upon to support three to five additional distributed events not yet announced or anticipated as of this date. The JMETC Program will continue to coordinate weekly activity on the JMETC infrastructure by its customers.
- JMETC will complete the concept development of a JMETC mobile node to support transitory site testing needs.
- Collaboration with the Training community will continue via JMETC's dedicated, full-time liaison to the USJFCOM with the intent to synchronize investments, prevent duplication, and ensure compatibility between the organizations. Key elements of this

compatibility include the TRMC support to the Joint Command and Control Network Partnership and the JMETC support to the Joint Systems Integration and Interoperability Laboratory. Through these support relationships, the TRMC and JMETC will support the Command and Control Capability Portfolio Manager and the DOT&E in conducting interoperability and information assurance assessments of both new and legacy C2 systems. Systems will use the JMETC infrastructure, linked to the JFCOM J7 Joint Training Enterprise Network, to conduct these assessments. In this manner, testing of C2 systems will take place during Combatant Command (COCOM) sponsored training events in a fully operational joint context.

- JMETC will also continue to reach out to both the Test and Training Communities by attending various conferences, symposia, and meetings. At these assemblies, JMETC will continue to provide lectures, instructional periods, and working groups for attendees. These venues enable JMETC to inform, and educate testers, trainers, agencies, and organizations across the Department. Collectively, these communities can provide the warfighter with a cost-effective and timely distributed test capability.

4.4 Programs and Policy:

MRTFB Policy: Title 10, United States Code, Section 196 requires the Director, TRMC to review proposed DoD budgets and expenditures for T&E facilities and resources of the MRTFB. Additionally, the Secretary of Defense has assigned the USD(AT&L) and the TRMC responsibilities for the management of T&E resources and infrastructure. DoD Directive 3200.11, *Major Range and Test Facility Base (MRTFB)*, assigns the TRMC as the lead oversight agency for the MRTFB. As such, the TRMC has a responsibility to ensure the MRTFB maintains robust and flexible T&E capabilities to support the warfighter. The Director, TRMC is authorized to implement policy for the MRTFB, including composition, sizing, and usage; to monitor and evaluate the MRTFB to ensure its adequacy to meet requirements; and to approve changes to the T&E capabilities of the MRTFB.

DoDI 3200.18: Provides policy and procedural guidance pertaining to the management and operations of the MRTFB. These policies and procedures will be crucial in ensuring that the Department preserves, as national assets, a broad base of T&E capabilities to support the RDT&E and acquisition process. Specifically the Instruction (1) Establishes policy for identifying the composition of the MRTFB, (2) Implements policy and assigns responsibilities, (3) Establishes procedures for changing the composition of the MRTFB, (4) Establishes uniform procedures for the management of the MRTFB and (5) Establishes MRTFB reporting requirements.

Specific procedures contain in the Instruction include (1) Procedures for adding facilities or ranges, (2) Procedures for the closing or removing of facilities or ranges, (3) Procedures for requesting that facilities or ranges be placed in a mothballed status, (4) Procedures for requesting the reinstatement of a mothballed facility or range and (5) Procedures for requesting approval for a significant change to the capability of a facility or range.

4.5 Oversight of T&E Infrastructure:

Facilities Directory: The TRMC is responsible for the planning and assessment of the adequacy of the Major Range and Test Facility Base (MRTFB) to provide adequate testing in support of development, acquisition, fielding, and sustainment of defense systems. The TRMC also maintains an awareness of other test and evaluation (T&E) facilities and resources, within and outside the Department and their impact on DoD requirements.

To support this mission the TRMC has continued development of an enterprise level Test Capability Directory (TCD) that provides an online resource to support the acquisition community as well as TRMC's other missions including Strategic Planning and Budget Certification.

The TCD provides a flexible, secure, online database of specific test capabilities at the range, facility, or lower level and contains technical, financial, and metric data from across the T&E enterprise. The TCD is currently undergoing beta testing with the Services and DISA, which is scheduled to be available by the 3rd quarter of FY11.

Range and Installation Sustainment: The TRMC remains committed to ensuring that test and evaluation infrastructure is kept adequately sustained and viable despite the growing pressures of numerous and diverse encroachment factors. In FY2010, we particularly focused on two key areas.

First, we recognized that we needed a more complete fact-based overall assessment of how encroachment may be affecting the Department's T&E infrastructure's ability to carry out its multiple missions. To accomplish this, we leveraged a survey used for measuring the impact of encroachment on military training installations to provide a similar picture for T&E. A survey was conducted of all MRTFB activities, including a select group of non-MRTFB T&E test activities, to measure the impact of 13 encroachment factors, ranging from critical habitat to RF spectrum, on ten T&E mission areas, ranging from sea warfare to test environments. The survey data was compiled, and an evaluation made of the most pressing encroachment concerns by Activity, Service, and Department. As we previously reported--and as the results of this survey graphically re-emphasized--we continue to be vitally concerned about protecting against the further loss of, or encroachment on, RF spectrum set aside for military use. Our survey pointed this out as the number one concern across all Services exceeding by a factor of two the next nearest encroachment issues. We are in the process of developing a DoD test and training RF spectrum plan and intend to pursue its development in cooperation with the Sustainable Ranges Overarching Integrated Product Team (OIPT).

The results of the survey have been incorporated into an encroachment report that will become an addendum to the 2010 Strategic Plan. As such, the report assessments and recommendations can be folded into the overall plan for maintaining and modernizing our T&E infrastructure.

Second, we focused on helping to develop processes to mitigate the competing needs of certain types of renewable energy projects being proposed for construction in close proximity to many of our most important T&E activities. The genesis of this issue is that the rapid growth in renewable energy projects across the United States, including many offshore areas, has become a strategic and economic necessity aimed at reducing the Nation's (including DoD), dependence upon foreign energy sources, particularly oil. OSD has therefore supported, encouraged, and even adopted ways to transition to these "green" energy resources. However, if not properly planned, these projects can inadvertently threaten certain National defense capabilities including key civilian aviation safety systems. For example, improperly sited wind turbine farms will significantly degrade radar performance, particularly Doppler types of radar that are used extensively for accurate DoD research, development, and test and evaluation measurement purposes; Homeland Defense Early Warning systems; FAA air control; and weather forecasting. Additionally, new transmission corridors are in planning that will connect the prime wind and solar geographic locations to load sites where the energy can be tied into the nation's electric grid system. These corridors, however, may need to pass within close proximity or even cross over T&E range areas. All such efforts require evaluation for compatibility with range mission requirements. To minimize confusion for developers on how to interface with DoD in coordinating the appropriate siting of renewable projects and routing of corridors, as well as expedite responses to their queries, TRMC along with other OSD and Service offices are participating in an OSD "clearing house" managed by AT&L(I&E). The clearing house will function as the Deputy Secretary of Defense's final arbitrator on all such projects potentially impacting any DoD installation. We have worked this issue primarily through our membership on the Sustainable Ranges OIPT.

One very critical element of the overall energy development initiative that the TRMC is continuing to monitor very closely is the senior level decision process dealing with opening of the Outer Continental Shelf to oil exploration and renewable energy development. Many of the proposed lease areas also support important Navy and Air Force's test missions. We will continue to work very closely with all involved parties to mitigate any potential impacts to our test ranges while also remaining sensitive to the nation's need to develop new energy sources.

The TRMC has continued its participation in two important sustainment forums including their subgroups where federal, regional, state, and local stakeholders periodically caucus to collaborate on specific sustainability issues. These are; the Southeast Regional Partnership for Planning and Sustainability (SERPPAS) and the Western Regional Partnership (WRP). Both SERPPAS and WRP are comprised of local government and civilian officials that are partnered with the DoD and other Federal agencies to address regional issues of common concern to include addressing encroachment affecting military controlled lands. These forums have proven highly effective in fostering a better understanding and appreciation of each other's interests and the seeking of mutually acceptable mitigation solutions.

Two additional inter-departmental range-focused forums that we are also active in are the Range Commanders Council Sustainability and Environmental Groups. Members to these groups, particularly from the Navy and Air Force, have been instrumental in developing

software tools that use data overlays and FGIS mapping protocols to provide an integrated picture of proposed renewable energy projects and their potential siting in relation to military installations. The results can be used to help determine what impact such projects may have on nearby range capabilities.

MRTFB Range Sustainment Newsletter: In June 2010, the TRMC published its first edition of the *MRTFB Range Sustainment Newsletter*. The objective of the bi-annual newsletter is to inform the T&E community of ongoing issues and initiatives involving long-term sustainability of the MRTFB. Articles within the newsletter highlight current encroachment issues and any new matters concerning sustainability. The *MRTFB Range Sustainment Newsletter* was distributed electronically to members of the MRTFB community involved in sustainability matters and distributed during Test Week 2010.

T&E Workforce Study:

During the past year, TRMC continued the development of a T&E Workforce database encompassing the MRTFB Workforce and the T&E Career Field component of the Acquisition Workforce (AT&L Workforce). Five fiscal years of workforce personnel records have now been compiled so that in addition to a bi-annual analysis of workforce demographics, we can begin to analyze workforce trends.

Analysis of the FY 2008 MRTFB government civilian workforce included a review of the various categories of government civilian employees. As of September 30, 2010, the workforce includes personnel in the following classifications:

- General Schedule (GS);
- National Security Personnel System (NSPS);
- Wage Grade (Blue Collar); and
- Senior Executive System (SES).

The following table summarizes the MRTFB workforce totals by category.

	NUMBER		PERCENT	
CATEGORY	FY2009	FY2010	FY2009	FY2010
NSPS	5,780	4,817	58.3%	46.7%
General Schedule	2,974	4,160	30.0%	40.4%
Wage Grade	1,153	1,282	11.6%	12.4%
SES	8	8	0.1%	0.1%
Other		41	0.0%	0.4%
TOTAL	9,915	10,308	100.0%	100.0%

Figure 9: FY 2009 – 2010 MRTFB Civilian Workforce Totals by Category

Although the MRTFB Workforce has been relatively stable during the five years that the TRMC has been analyzing workforce demographics, two major congressional initiatives will have significant impact on the workforce size and composition in the next several years. One of

these is the mandate to "in-source" jobs currently performed by contractors, i.e., replace contractors with government personnel. This requirement will result in a significant increase in government personnel in the various MRTFB Activities.

The second is the recently enacted National Defense Authorization Act for Fiscal Year 2010 (NDAA 2010) that contains a provision to repeal NSPS and requires the transition of NSPS employees, with no loss in pay, to previously existing civilian personnel systems no later than January 1, 2012.

By way of background, OSD developed the NSPS to provide the Components with greater flexibility in recruiting and retaining personnel than was possible in the Office of Personnel Management (OPM) personnel system previously used for all government personnel, particularly, scientific and engineering personnel. The NSPS classification/compensation structure includes four Career Groups, one of which is a Scientific and Engineering group. Of the approximately 10,300 civilian personnel in the MRTFB Workforce, 46% are classified under the NSPS. The transition out of NSPS is reflected in Figure 9. This transition will likely take several years to complete.

Finally, we note that about 12% of the civilian workforce is comprised of Wage grade (blue-collar) personnel. These individuals map into the "enlisted-level civilian" personnel in the Defense Management Data Center (DMDC) occupational taxonomy (DoD Occupational Conversion Index). All of our previous demographic analyses have focused on the "professional" (Officer-level) workforce that encompasses the MRTFB Scientific and Engineering personnel. The Wage Grade component of the workforce represent a key technical support element of the workforce, the composition of which will be analyzed in detail in future analyses. These individuals are predominately non-degreed, albeit they perform many highly technical tasks, attesting to the importance of training for these individuals.

During the past year, the TRMC completed the development of a set of workforce metrics that will enable TRMC to assess the health of the MRTFB Workforce. These metrics will be of value to Service T&E executives and MRTFB Activities as well. The workforce metrics are focused on assessing the success of the MRTFB Activities in achieving S*taffing* objectives, both overall and in key occupational categories; S*tability* of the workforce in terms of staff retention rates; and *Competence* as measured by increases in professional certifications. The personnel data required to produce and publish these metrics are a product of annual workforce demographic processing and analysis. Unit manning documents are now required to complete this effort.

Additionally, as noted in our previous annual report, we have commenced an effort to automate certain aspects of the annual workforce personnel demographics processing. Several database applications are being considered. Candidate Microsoft applications include FoxPro, Access, and MS Query, with a view to having the new software ready to process the FY 2010 personnel data.

Finally, in the course of the past year we have undertaken a study of identifying those additional elements of the T&E Workforce that are not covered by the MRTFB Workforce, Operational Test Agencies Workforce, and the T&E Career Field component of the AT&L Workforce. Well over 100 organizations reported T&E workload in the 2005 BRAC. Since the personnel in many of these organizations are involved in T&E as a collateral/part-time activity, adding these personnel to our T&E Workforce database will require Service acquiescence to tagging the personnel records of those individuals who are engaged in T&E as well as the percentage of time spent on that activity. Rather than undertaking an effort of such magnitude, we have chosen to prototype three to five DoD activities that we know have a significant T&E mission and workforce, and work towards capturing workforce demographics for those personnel. After assessing those activities, we will determine a way ahead.

Program Assessment Rating Tool (PART) / Performance Metrics: Title 10, United States Code, Section 196 provides for the TRMC to "Identify performance measures associated with the successful achievement of test and evaluation objectives covered by the Strategic Plan." In this context, Measures of Performance (MoPs) address the important characteristics of the MRTFB to help the TRMC judge its health, and determine if DoD or Service policies are causing the desired improvement. In addition, MoPs can help motivate desired behavior by measuring characteristics considered important. Additionally, these performance measures also support the Office of Management and Budget (OMB) requirement for the PART. The performance measures identified in the Strategic Plan support the enterprise. The TRMC recognized the need to establish links to key performance measures at the range level to provide applicability to budget needs, improved performance, and policy-making.

TRMC identified its goal for the MRTFB, associated objectives, and measures of performance in the "CY 2007 Strategic Plan for Defense T&E Resources." Upon reflecting on its recently modified goal to ensure an MRTFB with robust and flexible T&E resources that satisfy acquisition T&E requirements and, thereby, support the war fighter, the MoPs from the 2007 plan have undergone a complete review and rework and some are now ready for implementation in FY 2010. Appendix D of the “CY 2010 Strategic Plan for Defense T&E Resources” identifies 17 MoPs. Data is available for 11 of the 17 MoPs. Two MoPs focus on T&E gaps, current and future, as addressed in the Department’s FY/DP, and TRMC’s own T&E/S&T and CTEIP programs. The intent of the eight MoPs is to baseline the current MRTFB workforce. There are three measures of staffing effectiveness and one measure for contractor support; three measures for stability and retention; one measure for workforce competency. Finally, there are two measures for MRTFB business practices, including Investment & Modernization funding and effectiveness in identifying T&E capability duplication and subsequent follow-through.

The MoPs that have no data are Customer Satisfaction; Value to Customer; Condition Code; Workforce Competency; Workload (Capacity). TRMC is leading a working group made up of members from the Service(s)/DISA, DASD for DT&E and D, OT&E. This working group is addressing these MoPs. In 2010, the working group finalized the definitions of Condition Code; Workforce Competency; Workload (Capacity). Two other MoPs were identified Importance and

Infrastructure Relevance. The working group conducted a pilot study in 2010. The prototype sites (Army – Aberdeen Test Center, Navy – Naval Air Warfare Center – Aircraft Division Pax River, and Air Force – Arnold Engineering Development Center) volunteered to test the working group's MoPs model. In 2011, the working group will expand the effort to include more MRTFB sites and refine the MoP model. The remaining MoPs, Customer Satisfaction and Value to Customer, will be addressed in 2011.

TRMC will continue to invest additional effort in the development of these MoPs, and if they continue to show promise, TRMC will include them in subsequent strategic plans. One important aspect of performance metrics is to ensure linkage between range-level metrics and the DoD enterprise-level metrics where appropriate. As such, TRMC will continue to work with Military Department representatives to refine and enhance the current on-going efforts. This will involve developing trend data to support the performance metrics over time, plus developing quantitative criteria, thresholds, or numerical ranges to assess the performance of the MRTFB T&E infrastructure in relation to the stated objectives.

Future efforts will concentrate on the following two areas:

- The voice of the customer regarding how well the MRTFB is meeting known weapon systems' T&E capability requirements and how well the MRTFB is providing traditional customer support; and
- Development of a process to capture Condition Code, Workforce Competency, Workload (Capacity), Importance, and Infrastructure Relevance of the MRTFBs.

4.6 Modeling and Simulation (M&S):

Digital models and simulations are a key test and evaluation resource for the T&E community. During FY 2010, TRMC provided support to the Department's M&S community through active participation in both the DoD M&S Steering Committee and subordinate DoD M&S IPT. In FY 2010, an update of the T&E community's M&S business plan was initiated which provided two key objectives: 1) to identify the current and evolving needs for models and simulations used in support of T&E and; 2) identify actions needed to acquire and apply M&S capabilities to meet those needs. The goal of this effort is to enable the increased use of modeling and simulation throughout the T&E community in support of weapon systems' acquisitions. These results from the T&E community will feed into the overall DoD Corporate and Cross-Cutting Business Plan and may serve as input to the TRMC strategic planning process. The TRMC will also work with the DoD M&S Steering Committee to conduct a department-wide M&S gap analysis and a plan to close those gaps.

4.7 Collaboration and Outreach:

4.7.1 NASA:

National Partnership for Aeronautical Testing: Through a Memorandum of Understanding signed in 2007, DoD and NASA established the National Partnership for Aeronautical Testing (NPAT) Council. As the forum for expanded cooperation in the area of aeronautical test infrastructure, the Council has laid the foundation for a management strategy for DoD and NASA aeronautical test facilities. The Director, TRMC, and NASA's Associate Administrator for the Aeronautics Research Mission Directorate chair the Council. It includes key aeronautics executives from NASA as well as representatives from each Military Department and from the Director, ASD (R&E).

In 2010, the Council addressed a number of interagency activities. The Council explored adoption of the Capability Reliance Framework, a rational system for reviewing the impact of potential and imminent facility closures from a national perspective. The framework helps decision makers assess the loss of capability associated with a facility closure and determine which alternative facilities can provide the capabilities and the capacity to compensate for that loss. The framework also helps inform decision makers about investment decisions that can improve the capability and/or capacity of the alternative facilities. The Council initiated a review of its Statement of Guiding Principles for Access and Pricing to ascertain its effectiveness over the two years since it was signed. The NPAT sponsored a Facility Users Meeting, which included representatives of Federal departments and agencies as well as U.S. industry. Following up on comments that were provided by facility users about the quality and the competitiveness of foreign aeronautical test facilities, the Council dedicated time to becoming better informed about the differences between U.S. and European aeronautical test facilities and their respective work forces.

Transonic and Supersonic Facilities Assessments: In July 2010, the leaders of the NPAT-sponsored transonic and supersonic facilities assessments provided the NPAT Council with a briefing that prioritized the recommendations from both assessments and included rough estimates of the costs of implementing those recommendations. Several recommendations from the Transonic Facilities Assessment were either in progress or had already been completed. Similarly, several recommendations in the Supersonic Facilities Assessment were either planned or already in progress. After evaluating the high priority recommendations from the two assessments, the NPAT Council plans to endorse a short report and distribute it to the departments and agencies that are in a position to implement the recommendations.

Hypersonic Facilities Assessment: This assessment of Federal hypersonic ground test facilities was initiated in 2009. The NPAT Council conducted an in-process review with the study team leaders in December 2009. As a result, the study team has adjusted its approach. They will survey national hypersonic test experts to identify key requirements for test capability and test data. Using the survey results, the team will develop a single requirements list for hypersonic ground testing. That list will be divided into four categories (aerodynamics, aerothermodynamics, material characterization, and propulsion). The entire list of Federal hypersonic ground test facilities will then be surveyed to ascertain their ability to satisfy the

required test capabilities. The study team will then down select the key national hypersonic ground test capabilities that are required to support DoD and national flight vehicle development of hypersonic weapons, aerospace vehicles, and space access systems. We anticipate completion of the hypersonic facilities assessment in 2011.

4.7.2 Collaboration with the Training Community:

In 2010, the TRMC continued to foster partnering opportunities with the DoD training community. The goal remains DoD's strategic vision of achieving seamless, interdependent test and training range capabilities. Collaboration efforts included the following:

- **Sustainable Ranges Working Group:** The TRMC remains committed to ensuring that T&E infrastructure is kept adequately sustained and viable despite the growing pressures of numerous and diverse encroachment factors. In FY2010, we recognized that we needed a more complete fact-based overall assessment of how encroachment may be affecting the Department's T&E infrastructure's ability to carry out its multiple missions. The results of the survey have been incorporated into an encroachment report that will become an addendum to the 2010 Strategic Plan. As such, the report assessments and recommendations can be folded into the overall plan for maintaining and modernizing our T&E infrastructure. As the results of this survey graphically re-emphasized--we continue to be vitally concerned about protecting against the further loss of, or encroachment on, RF spectrum set aside for military use. Our survey pointed this out as the number one concern across all Services exceeding by a factor of two the next nearest encroachment factor. We are in the process of developing a DoD test and training RF spectrum plan and intend to pursue its development in cooperation with the Sustainable Ranges Overarching Integrated Product Team (OIPT).
- **JMETC:** Collaboration with the Training community continued via JMETC's dedicated, full-time liaison to the USJFCOM with the intent to synchronize investments, prevent duplication, and ensure compatibility between the organizations. Key elements of compatibility efforts included the TRMC support to the Joint Command and Control Network Partnership and the JMETC support to the Joint Systems Integration and Interoperability Laboratory. Through these support relationships, the TRMC and JMETC supported the Command and Control Capability Portfolio Manager in conducting interoperability and information assurance assessments of both new and legacy C2 systems.
- **CTEIP**: The Common Range Integrated Instrumentation System project is developing the next generation range tracking system that will provide enhanced time-space-position information accuracy and selected participant data bus information for aeronautical, maritime, and ground systems. This project will provide Major Range and Test Facility Base (MRTFB) ranges with the capability to collect sub-meter time, space, position information (TSPI) and increased throughput of selected aircraft data bus information needed for advanced weapon systems testing. The project incorporates design features to accommodate its employment by the training community.

4.7.3 Range Commanders Council:

During the course of the year, TRMC staff participated in two Range Commanders Council (RCC) conferences. The RCC is a forum in which the various test center and test range commanders come together to discuss topics and issues of common interest. Pacific Missile Range Facility (PMRF) at Barking Sands, HI, hosted the February meeting. At that Conference, TRMC briefed the Range Commanders on an update of TRMC activities since the last RCC Conference, and distributed copies of the new DoDI 3200.18 to the Range Commanders.

30th Space Wing, Vandenberg AFB, CA sponsored the August RCC meeting. At that meeting, TRMC briefed the Range Commanders on an update of TRMC activities since the last RCC Conference and distributed copies of this year's TRMC Annual Report to the Range Commanders. The JMETC Program Manager delivered a briefing on the current activities and status of connectivity related to JMETC and the MRTFB Ranges. TRMC also presented a briefing on the DIACAP Tiger Team results, which TRMC chaired. At both conferences, the TRMC briefings to the RCC went well.

4.7.4 Test Week 2010:

Another very successful method of broadening communications among the T&E community, as well as the acquisition community, is the annual "Test Week" symposium sponsored by the TRMC. "The Impact of Defense Acquisition Reform on Test and Evaluation: One Year Later" was the theme for this successful 2010 conference. Focus was on the impact of the Acquisition Reform Act, the challenges created with respect to providing the T&E capabilities and expertise necessary to continue support to the customer and testing of the next generation weapon systems. The technical program discussed significant parts of the reform act to include the issues of "In Sourcing" and "Organizational Conflict of Interest." A highlight of the exhibit hall included a live JCAS joint distributed test event over nodes provided by the Joint Mission Environment Test Capability (JEMTC) Program. This demonstration allowed visitors to experience the work of JMETC and the impact joint test events have on the nation's military test and evaluation programs. The Symposium concluded with an exceptional briefing from an in theater war fighter providing a report on how well systems were working in the field.

Mayor Tommy Battle of Huntsville Alabama, followed by MG James Myles, made welcoming remarks to kick off the technical program attended by 600+ attendees. Dr. John Foulkes, Director, TRMC opened the technical discussions with a short overview of the live JCAS Distributed Test that would be ongoing during the symposium. Mr. Steven Whitehead, JFCOM Technical Director followed with a more detailed briefing on the expectations and processes of the JCAS event. The Keynote Speaker for the opening morning was the Honorable Philip E. Coyle. In concert with the theme of the symposium the opening blue ribbon panel was "Acquisition Reform Act; One year Later: "Scorecard", chaired by Dr. Steven Kimmel. Major General Stephen Sargeant, USAF, Cdr, AFOTEC, was the first day luncheon speaker. The second blue ribbon panel of the symposium theme was; "Acquisition Reform Act; One Year Later: An

Acquisition Community Perspective, with the Honorable Claude Bolton, Defense Acquisition University Executive-in-Residence, as the chair. This year, the symposium had a new format for two additional panels in a town hall meeting arrangement, allowing interaction between the panel members and the attendees. These "Town Hall" meetings were exceptionally well received. The first Town Hall meeting, theme was "Impact of Organizational Conflict of Interest on T&E." Mr. Chip Retson, DOD Counsel to the Defense Acquisition Regulations System (DARS). The second Town Hall meeting theme was; "Government In-Sourcing and the T&E Workforce". Mr. Thomas Hessel, Senior Manpower Analyst, Requirements, Program, and Budget Coordination Directorate, OUSD (P&R) was the chair.

Additional guest speakers that presented during the symposium included; the Honorable Michael Gilmore, PHD, Director, DOT&E, OSD; LTG William (Bill) Phillips, Principal Military Deputy to the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) and Director, Acquisition Career Management; BG William Bender, USAF, Director, Warfighting Systems Integration & Deployment, Office of Warfighting Integration & Chief Information Officer, Office of the Secretary of the Air Force; Mr. John Riley, Manager, technical Strategies and Integration, FAA. The closing speaker was a special presentation from a returning "warfighter" who presented the view from the front. CPT Nassar Jabour, Jr. U.S. Army, S-3 Plans 54 EN BN and former, Platoon Leader of DET 2 RCN 13 541st EN CO, presented; "IED's in Afghanistan – Equipment Effectiveness and Lessons Learned." This presentation was most well received and put meaning to what we are trying to do for our soldiers.

In addition to the panels and speakers, there were five technical tracks. The track themes were *Impact of Range Encroachment & Sustainability on the Conduct of T&E; Test and Evaluation Requirements for the Net Enabled Systems; Urban and Littoral Test Capability Challenges; National Cyber Range/ Implication for T&E; and Testing of Autonomous Systems, Robotics and Artificial Intelligence.*

4.7.5 T&E Infrastructure Annual Review:

The goal for this year's review focused on the Service Capability Roadmap presentations, with reports from the Army, Navy, and DISA. TRMC revamped the roadmap guidance this year to enable the Services to compile the data using reporting systems already in place. This resulted in more detailed, informative presentations that proved to be the highlight of the Review. The conference also featured an Acquisition Customer Panel with presentations from Program Executive Offices, Program Managers, and training customers addressing to what extent the MRTFB is meeting customer T&E and training requirements. A panel featuring Encroachment discussion topics rounded out the agenda, and provided detailed information on a current T&E hot button issue. Specific topics from this panel included Spectrum challenges, Point Mugu Sea Range Ship Traffic, DoD Assessments of Proposed Offshore Oil & Gas/Renewable Energy Development on the Outer Continental Shelf, and Encroachment Challenges at US T&E Facilities.

Included also was a recap of the five Action Items from the 2009 Annual Review:

1. Continue activities of the performance metrics working-level IPT (AEDC (Dr. Kraft)/TRMC Test Infrastructure);
2. Develop a business case for MRTFB use with the Acquisition community that highlights the advantages of using MRTFB assets for weapon systems testing (Tiger team of Services and DASD(DT&E), D,OT&E, TRMC);
3. Examine the possibility of a unified process for reporting T&E costs, including contractor T&E costs (OSD Comptroller, TRMC Test Resources Division and Strategic Planning in coordination with Military Departments);
4. Define problem scope and outline an approach to include recommendations to solve the problem of "Contractor conducted T&E that precludes Government access to data" (TRMC, DOT&E, and DASD(DT&E));
5. Develop and provide T&E Capability Road Maps for each MRTFB Activity that addresses associated ranges and facilities. The plans should include information relating to all T&E Capabilities and address the strategic vision for the Activity to include investment and divestment strategies:
    a. Action 1: TRMC Test Infrastructure will provide range/facility road map content guidance to Service T&E Headquarters and MRTFB Activities (TRMC Test Infrastructure);
    b. Action 2: Service T&E Headquarters, in coordination with MRTFB Activities, will develop and submit capability road maps to TRMC (Service T&E Headquarters).

At the Review, the attendees recommended closing Action Items 2, 3, 4 and continuing Action Items 1 and 5. There are some ongoing elements of action item 4, specifically policies to direct Services to default to MRTFB Ranges/Facilities for testing, and document specific cases where MRTFB assets do not meet the testing needs. Currently, the Army has published this policy, “Efficient Use of the DoD Test Infrastructure” (November 10, 2010). The Air Force is working a similar policy, and will publish this as an Instruction when complete. TRMC will adjust the Action Item 5 deliverables to reflect the guidance already in place from this year’s review.

Lastly, the TRMC briefed a synopsis of the two key action items that resulted from this year's review, including:

- Continue the work of the Performance Health Metrics Senior Working Group; and
- Recommendations for modifications of Service(s)/DISA exhibits

See memorandum dated 21 September 2010, “TRMC T&E Infrastructure Review Action Items.” The TRMC will monitor these action items during the year ahead and brief out the results at the 2011 Annual Infrastructure Review, scheduled for August in Tampa, Florida.

4.7.6 MRTFB Site Visitation Program:

TRMC used our routine MRTFB site visits to gather preliminary data for our directory database as well as to discuss range issues with range personnel.

Pacific Missile Range Facility (PMRF) – Located on the west side of the Hawaiian island of Kauai, PMRF is predominately a training range for the Navy. Major test programs at the site include missile defense for both the Navy and the Army, and ICBM follow-on testing in coordination with Vandenberg AFB, CA and the Reagan Test Site. The PMRF Telemetry Equipment is primarily located at Makaha Ridge on the west side of Kauai are critical for ICBM tests from Vandenberg AFB to the Reagan Test Site as they gather the telemetry required by the START treaty. There is an issue of keeping the expertise for the assets, as the contract does not allow for funding contractor personnel during down times. The Navy is working this issue. MDA uses the Kauai Test Facility (KTF), just north of the main PMRF base, and operated by Sandia Labs under DOE, to launch targets. The DOE will be turning the KTF back to the Navy in the next year. The Navy wishes to work out a transition agreement with MDA to ensure MDA provides sustainment funding for the first year, while Navy POMs for future sustainment. However, MDA has been reluctant to commit to multi-year funding.

Reagan Test Site (RTS) – Located at the Kwajalein Atoll in the Republic of the Marshall Islands, RTS supports ICBM and missile defense testing. It also has an increasing support role to Air Force Space Command and STRATCOM. The remote location and harsh environment make operations expensive so RTS has taken steps to reduce the footprint on island. The Ground Based Radar Prototype (GBR-P) is a relic of the National Missile Defense (NMD) program of the late 1990's and MDA wishes to close it down to reduce costs. The RTS commander is confident that there are customers for this X-band radar and considers the successful transfer of GBR-P to the range his #1 priority. It would take an estimated $8 million to upgrade the GBR-P with the Radar Open System Architecture common control interface, integrated with the range operations, and $1 to 2 million a year for O&M. RTS has finished laying the fiber-optic link from the atoll to Guam enabling RTS to reach back to Huntsville, AL for remote operation of test events. Although the remote operations haven't yet begun, and won't for at least another year, savings from the project are already being realized due to prior POM reductions from efficiencies gained throughout the 5-year project.

30th Space Wing (Vandenberg AFB) - The missions executed at Vandenberg include operational missile defense, USG space launch, and commercial space launch in addition to ICBM and missile defense testing. The Air Force is engaged in a Launch Enterprise Transformation (LET) to optimize Vandenberg space launch operations and safety. LET has been driving efficiencies that cut or reduce MRTFB test capabilities, which may adversely affect MDA, NRO, and ICBM programs. Discussions are on-going among the affected programs, the Air Force, and OSD to resolve these issues.

Navy Underwater Warfare Center (NUWC) Keyport (Nanoose and Dabob Ranges) – NUWC consists of the Dabob Range and facilities near Keyport, WA and the Nanoose Range, officially known as the Canadian Forces Maritime Experimental and Test Ranges (CFMETR), located near Nanoose Bay, British Columbia. Dabob Range is considered the highest instrumented underwater range within NAVSEA and the quietest acoustic underwater range in the continental US. Nanoose in the Straits of George is the only Maritime OAR in Canada. Canada utilizes their partner countries' facilities and ranges for T&E. The major concern is the Nanoose range personnel have an average age of 54. Extensions of Dabob and Quinault Ranges are still to be completed. The Environmental Impact Statement is expected to be complete and the extensions approved by end of CY10. The extended regions of the ranges will use portable instrumentation.

Air Force Flight Test Center (AFFTC), Edwards AFB, CA – AFFTC is the premiere flight-test center for the Air Force. Located in the high desert of California, AFFTC shares airspace with the Navy's China Lake and Pt. Mugu facilities to increase available test scenario options. There is a general concern that contractor's continue to build their own facilities for developmental test instead of using available government facilities. T&E workload is expected to pick up significantly, as JSF begins flight-testing. The Ridley Control Center completed considerable preparation for JSF, with the addition of three new control rooms. AFFTC contractor-to-civilian conversion is currently underway and according to their staff, they have been implementing on a one-to-one conversion model for both the number of personnel and funding. The biggest issue with the conversion is retaining contractor staff and the reduction in flexibility for workload surge and contraction. Currently 20 contractor personnel have been successfully converted, with plans of up to 30 more for FY11. FY12 is still TBD.

5.0 Other Significant Activity:

5.1 Aeronautics RDT&E Infrastructure Interagency Working Group (IIWG):

The TRMC, representing the DoD, is a co-chair of the IIWG along with representatives from NASA and the FAA. The IIWG is chartered by the Aeronautics Science and Technology Subcommittee (ASTS) of the National Science and Technology Council's Committee on Technology. It is responsible for developing a National Aeronautics RDT&E Infrastructure Plan that focuses on the critical RDT&E infrastructure assets and capabilities necessary to reach the goals and objectives outlined in the National Aeronautics Research and Development Plan, which was approved by the National Science and Technology Council in February 2010.

In 2010, the IIWG updated its initial draft of the national aeronautics RDT&E infrastructure plan, taking care to identify and describe all critical infrastructure shortfalls that could adversely affect the nation's ability to achieve the goals and objectives in the February 2010 aeronautics research and development plan. The TRMC working in collaboration with the other IIWG co-chairs and the ASTS to refine the draft plan for final review, and obtained final approval of the report in December 2010. Public release and initial implementation will take

place in 2011. In addition, the IIWG has been asked in 2011 to address the future direction for four components of the RDT&E Infrastructure Plan. Those components are (1) interagency cooperative management of the infrastructure, (2) development of a distributed network infrastructure, (3) redundancy in the aeronautics RDT&E infrastructure, and (4) international issues.

5.2 Air Force Electronic Warfare Evaluation Simulator (AFEWES):

In May of 2009, and in accordance with the January 18, 2008 USD AT&L Memo: "Changes to the Major Range and Test Facility Base," and SR 110-77, the Air Force approached the Test Resource Management Center (TRMC) for approval to relocate the Air Force Electronic Warfare Evaluation Simulator (AFEWES) test capability to facilities at Eglin AFB FL and Wright-Patterson OH. In accordance with the OSD and congressional guidance, the Test Resource Management Center reviewed the Air Force proposal and developed a consolidated summary report of findings. As a result of these findings the Test Resource Management Center gave provisional approval to the Air Force relocation request in the June 24, 2009 Memo for the Commander, Air Force Flight Test Center, Subject: Relocation of the Air Force Electronic Warfare Evaluation Simulator Test Capabilities. SR 110-77 also required the Test Resource Management Center transmit its report to the congressional defense committees, which TRMC accomplished on July 8, 2010.

Subsequent to this activity, on July 24, 2009, the House Appropriations Committee expressed concern about DoD's proposed relocation of the Air Force Electronic Warfare Evaluation Simulator. House Report 111-230 accompanying the FY 2010 Department of Defense Appropriations Act directed that "funds shall not be obligated or expended to relocate this simulator until a comprehensive cost benefit analysis, reviewed by GAO, is provided to the congressional defense committees." Furthermore, because the simulator's specialized test capabilities are a vital element of our national defense posture, the House Report directed that the study's findings "should demonstrate the technical merits of any proposed relocation." For the purposes of expediency, during the May 19, 2010 GAO review "entrance" meeting, the Air Force chose to submit the OSD report as the basis for their comprehensive cost benefit analysis in response to HR 111-230. The GAO provided a statement of facts regarding their findings October 12, 2010 and provided an opportunity for TRMC and the Air Force to comment. The final GAO report entitled "Defense Infrastructure – Further actions needed to support Air Force Electronic Warfare Evaluation Relocation Plans (GAO – 11 – 123R) was issued on January 26, 2011, and is available at http://www.gao.gov/Products/GAO-11-123R.

5.3 In-sourcing Related Studies:

With the National Defense Authorization Act for FY 2010, the TRMC was tasked to conduct two studies related to in-sourcing initiatives of the T&E facilities and ranges of the Defense agencies. The Senate Report accompanying S. 1390, the National Defense Authorization Act (NDAA) for Fiscal Year 2010, requires the TRMC provide a report to the congressional defense committees to describe the extent to which contractor positions in the

Major Range and Test Facility Base should be converted to Department of Defense civilian employee positions. H.R. 111-166 report to accompany NDAA for FY 2010 requires the TRMC provide a report describing the potential negative impacts of projected funding levels for the Air Force test and evaluation (T&E) program to congressional defense committees.

Publication of the report was delayed for data collection. At year-end, the report was in coordination.

5.4 Counter-Improvised Explosive Device (C-IED) Joint Analysis Team (JAT):

On July 20, 2009, the Director, TRMC, chartered a Joint Analysis Team (JAT) to study the state of the Counter Improvised Explosive Devices (CIED) T&E capabilities and infrastructure in response to the April 2008 Guidance for Development of the Force, and a request for assistance by the Deputy Director, Joint Improvised Explosive Device Defeat Organization (JIEDDO). The JAT was chartered to determine, among other things, the number and dollar amount of CIED T&E investments, associated sustainment resource requirements, and to make recommendations as to where the CIED T&E assets should transition. The deliverables from the JAT were a Transition Plan/Report, and a summary briefing of the findings for presentation to USD (AT&L). The JAT was comprised of subject matter experts from the three Services, JIEDDO, and key members of the OSD staff including DOT&E, SSE, PA&E (now CAPE), and Comptroller. The JAT proceedings took place over the course of seven months, and culminated in issuance of the coordinated Transition Plan/Report[1] by Director, TRMC, on March 9, 2010. The JAT report recommended that CIED T&E sustainment issues be addressed and resolved corporately with the overarching effort to identify JIEDDO enduring capabilities requiring sustainment. The JAT catalogued 24 test capabilities comprised of 75 separate assets totaling a $163M investment across the Department. Further, the JAT identified seven core CIED T&E assets located at Yuma Proving Ground (YPG) to be sustained for the near future, with a cost of $26M for FY 2011 – 2013. These seven assets were determined to be critical and met the DoDI 3200.18 criteria for inclusion into the Major Range and Test Facility Base (MRTFB). However, the JAT report also acknowledged that IAW DoDI 3200.18 only the owning Service, in this case the Army, could nominate the C-IED T&E assets for inclusion into the MRTFB.

The results of the JAT were presented to PDUSD (AT&L) and to Assistant Secretary of the Army, Acquisition, Technology, Logistics (ASA (ALT)). During these meetings, TRMC personnel acknowledged the Army T&E portfolio likely did not have the necessary resources to accept transition and sustainment responsibilities from within the current Army T&E institutional funding. TRMC expects resolution of this situation in the FY 2012 President's Budget.

[1]Interim Transition Plan/Report by the Counter-Improvised Explosive Device (C-IED) Test and Evaluation (T&E) Joint Analysis Team (JAT), 9 Dec 2009, Test Resource Management Center, OUSD(AT&L).

5.5 The Space and Missile Defense T&E Infrastructure Joint Analysis Team (SMD JAT)

The Under Secretary of Defense for Acquisition, Technology and Logistics has used the JAT concept extensively for the purposes of bringing together stakeholders to accomplish a shared mission. The Space and Missile Defense Test Infrastructure JAT was stood up by the Director, TRMC to look at several issues, relating to, AFSPC's launch and range enterprise transformation (LET) at the 30th and 45th Space Wings (Eastern and Western Ranges). The JAT serves two purposes. The first is to provide the TRMC with the information it needs to render informed decisions and exercise oversight for the MRFTB pursuant to section 196 of title 10, United States Code, and described in DoDD 3200.11, to include both approving T&E program strategies and ensuring that T&E programs are properly structured and funded for success. The second is to study the need for a National Space and Missile Defense Range construct for the purposes of development and oversight of a space and missile defense range capability. JAT members include stakeholders representing the following organizations: Air Force, Army, DOT&E, FAA, MDA, NASA, Navy, NII, NRO, NSSO, and TRMC.

On 8 October 2010, the OUSD (AT&L) sponsored an Overarching Integrated Product Team (OIPT) to consider the recommendations of the Space and Missile Defense (SMD) Launch and Test Enterprise Integrating Integrated Product Team (IIPT) for essential DoD capabilities. Issues addressed included: Maintaining the February 24, 2010 baseline capability on its two space ranges until decisions are made following the completion of an enterprise Analysis of Alternatives; Developing Space and Strategic Warfare Range Initial Capabilities Documents (ICD) to consider (as follow-up action) establishing a DoD-wide Space and Missile Defense Launch and Test Enterprise, with OSD oversight; and, recommending that USD (AT&L) direct CAPE to issue Analysis of Alternatives guidance. There was agreement to submit the necessary lCD (focused on T&E) to the Focused Logistics Functional Capability Board (FCB). The JAT plans to bring forward outcomes for Defense Acquisition Executive Review.

5.6 TRMC Published Documents & Reports:

- *Joint Distributed Test Infrastructure Capabilities-Based Assessment (CBA), October, 2009*
- *Aircraft Test and Evaluation Support Study (ATESS), December 2009*
- *2011 TRMC Budget Certification Report, January 2010*
- *Central Test and Evaluation Investment Program (CTEIP) FY2009 Annual Report, March 2010*
- *Counter Improved Explosive Devices (C-IED) Joint Analysis Team (JAT) Report, March 2010*
- *Test Resource Management Center FY 2009 Annual Report, April 2010*
- *The 2010 Strategic Plan for DoD T&E Resources, the Classified Annexes to the Strategic Plan and a Security Classification Guide for the Classified Annexes of the Strategic Plan September 2010*

6.0 Summary:

During FY 2011, the TRMC will continue to meet challenges, champion the need for T&E resources, as well as develop initiatives to increase T&E capabilities for DoD's acquisition programs. The TRMC will collaborate with the Services to continue to upgrade essential capabilities to meet the challenges presented by the increasing technological sophistication of our weapon systems and new operational concepts associated with DoD transformation efforts. Adequate investments in the T&E infrastructure will greatly enhance the ability of the acquisition process to deliver satisfactorily tested weapon systems to assure their effectiveness and suitability for our joint forces fighting in an increasingly complex environment.